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(54) HEAT CONDUCTING DEVICE AND ELECTRONIC DEVICE APPLYING THE SAME

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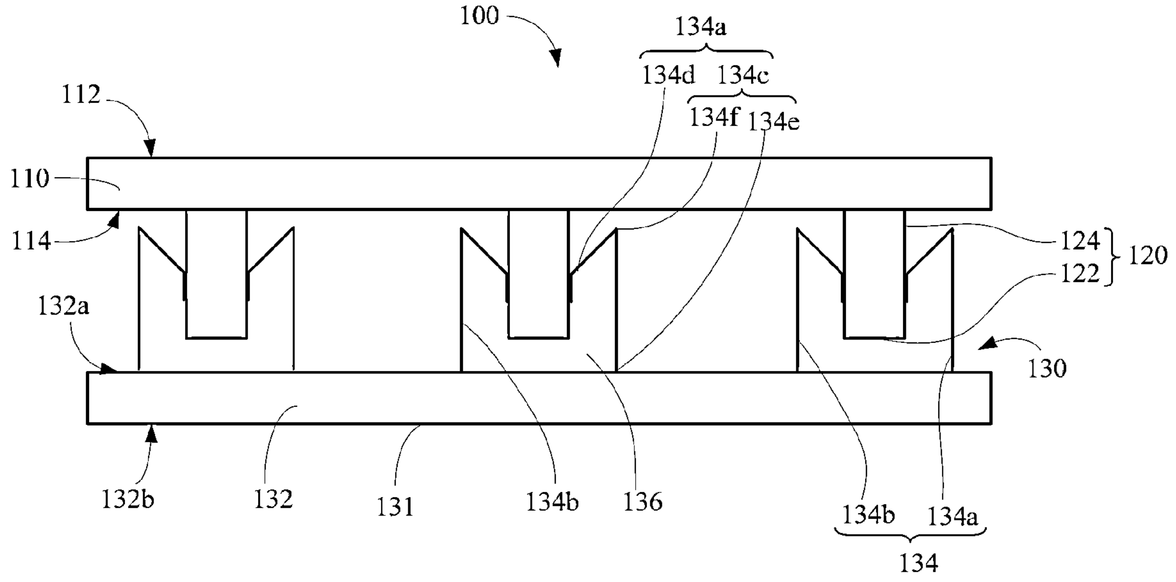
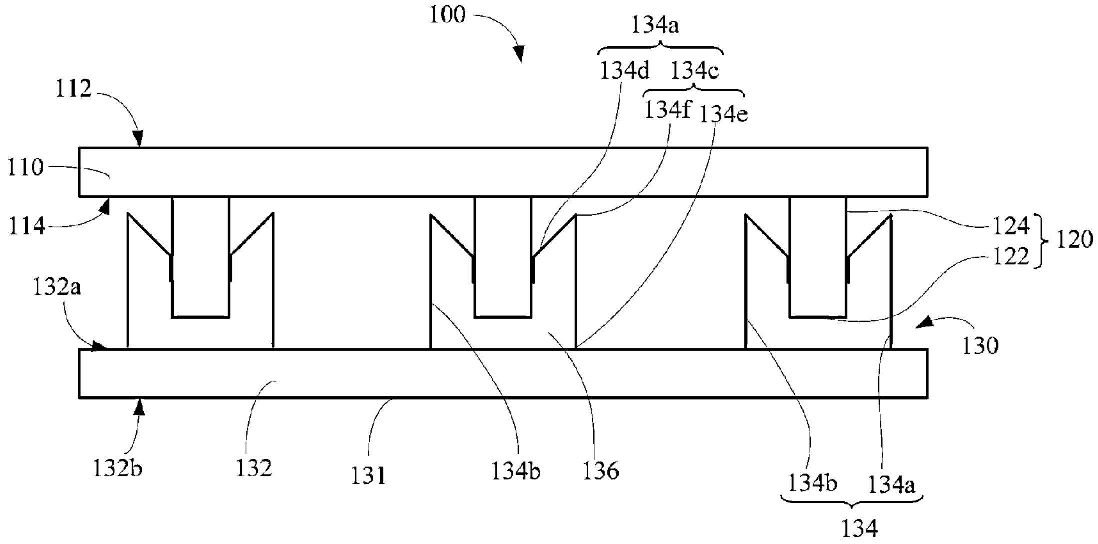
USPC **361/704**; 165/96

(57) ABSTRACT

A heat conducting device, comprising a first heat conducting board and a heat conducting structure, the first heat conducting board comprising an upper heat conducting arm provided on one surface of the first heat conducting board, the heat conducting structure slidably abutting against the upper heat conducting arm of the first heat conducting board to form a contact surface through which heat transfer is realized, the heat conducting structure comprising a heat conducting surface, wherein the heat conducting structure is used to keep the relative position between the first heat conducting board and the heat conducting surface, allow the varying of the distance between the first heat conducting board and the heat conducting surface of the heat conducting structure through relative sliding between the upper heat conducting arm and the heat conducting structure.

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134c
134f
134e
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124
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132a
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132b
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134b
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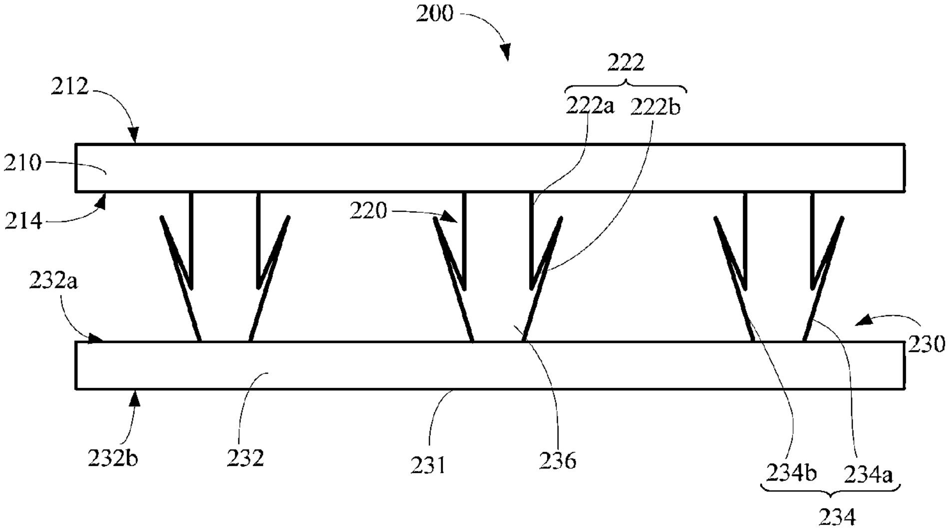
134b
134a
134

FIG. 1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222a
222b
212
210
214
220
232a
230
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232
231
236
234b
234a
234

FIG. 2

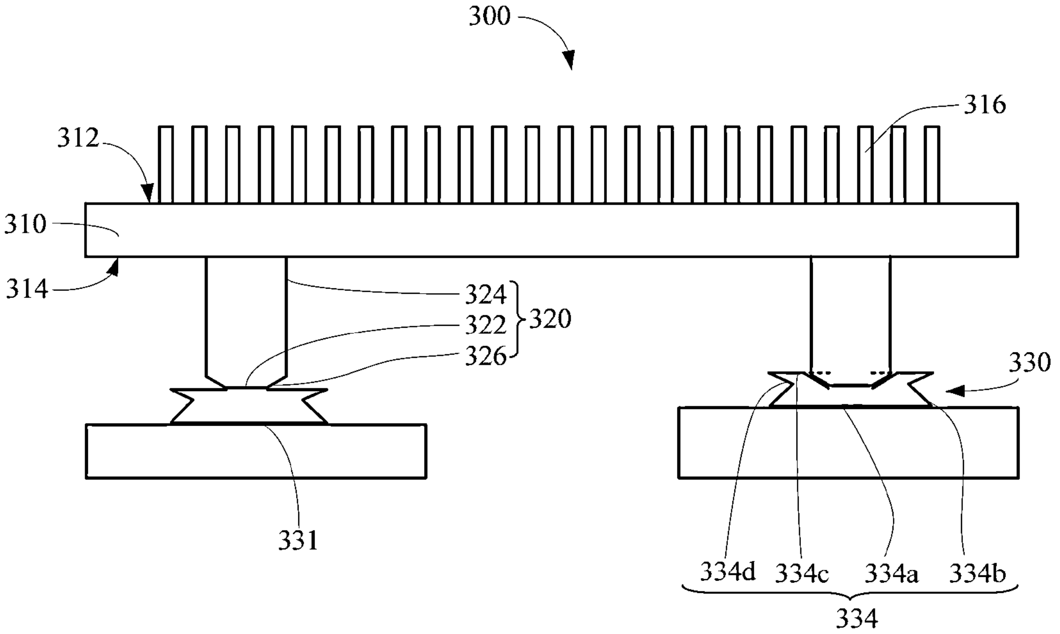
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FIG. 3

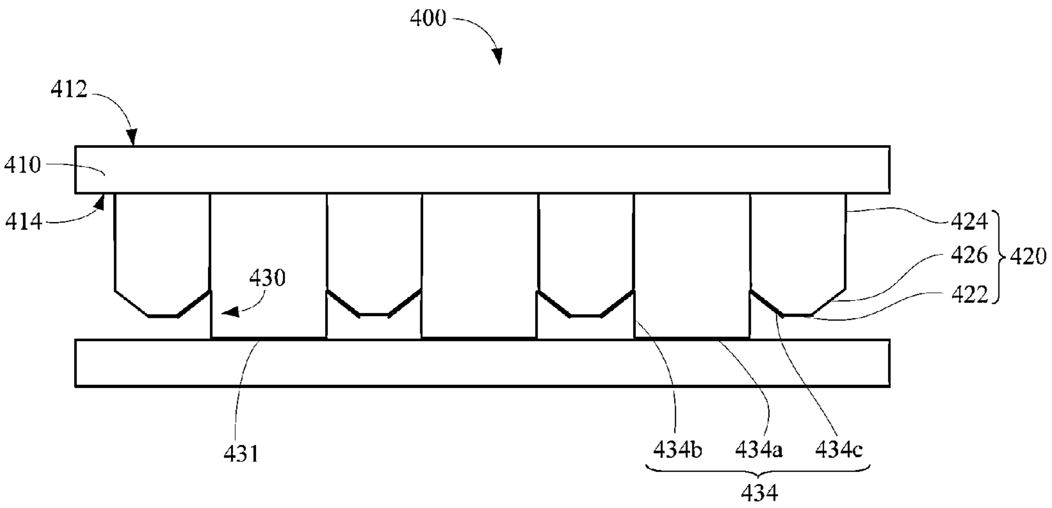
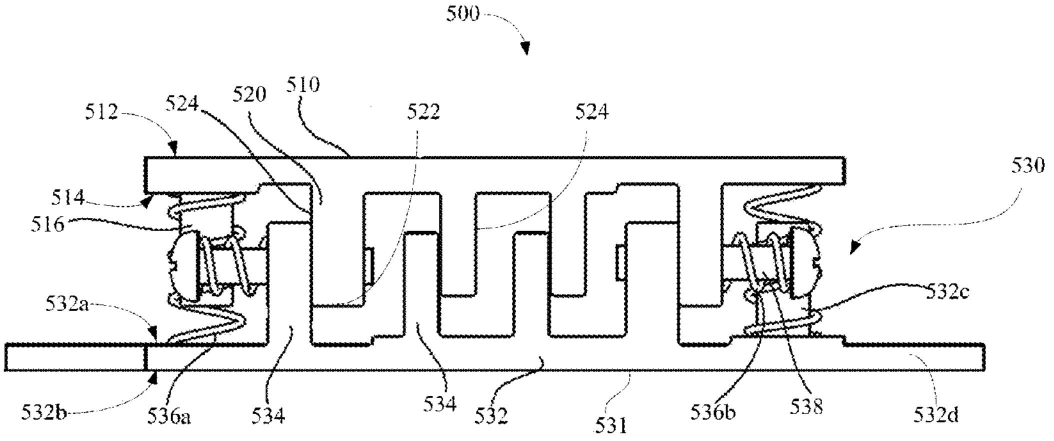


FIG. 4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532a
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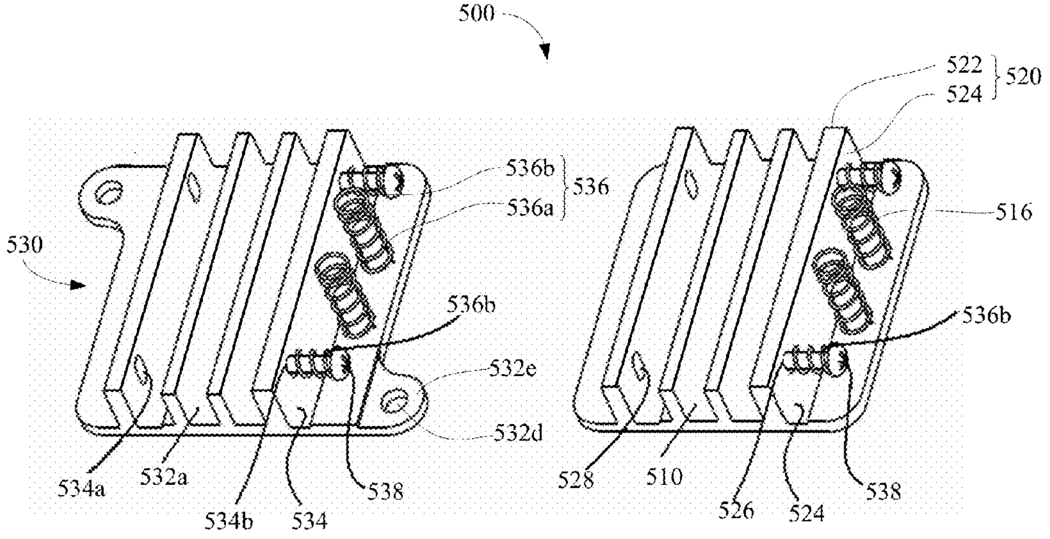
531
536b
538
532d

FIG. 5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536a
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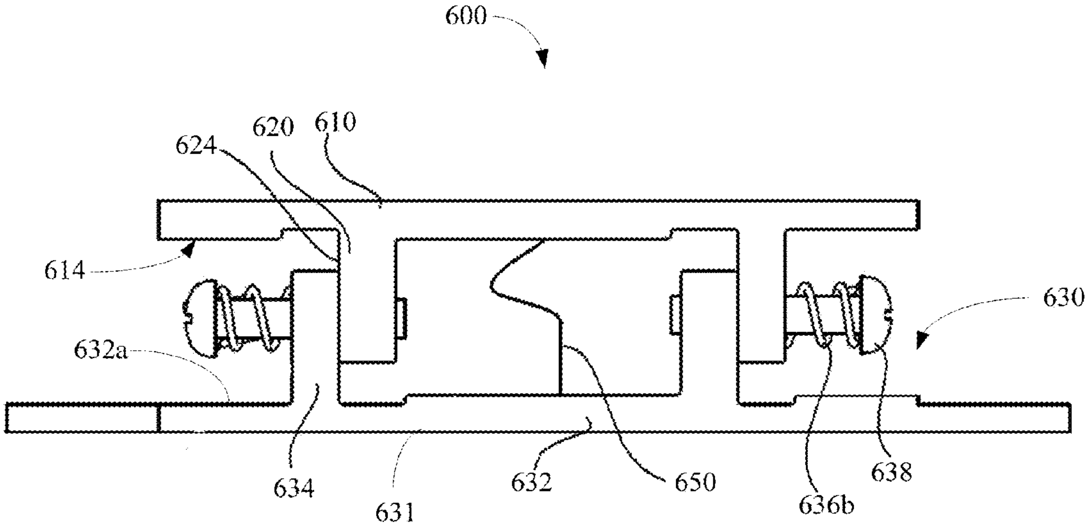
528
510
526
524
538

FIG. 6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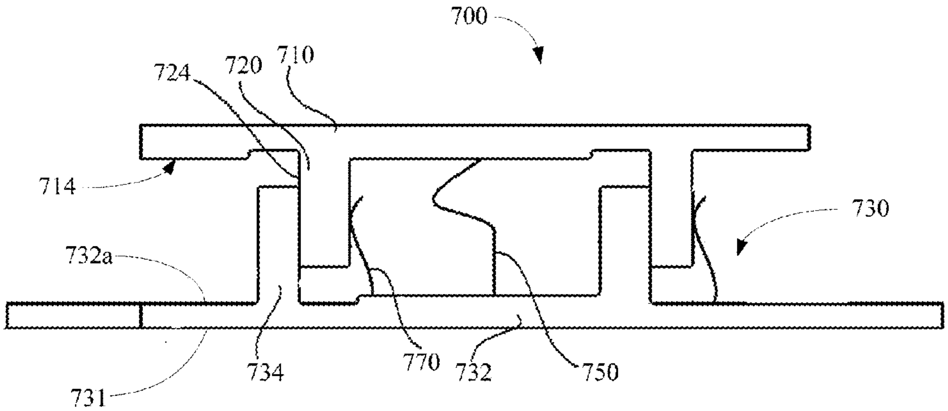
632
650
636b
638

FIG. 7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710
714
730
732a
731
734
770
732
750

FIG. 8

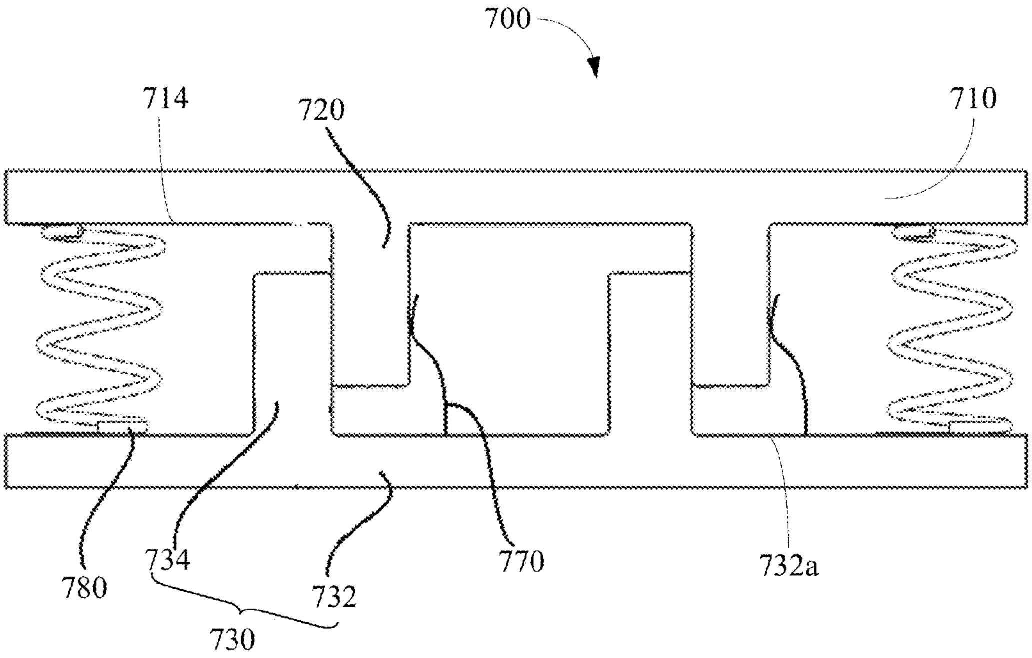
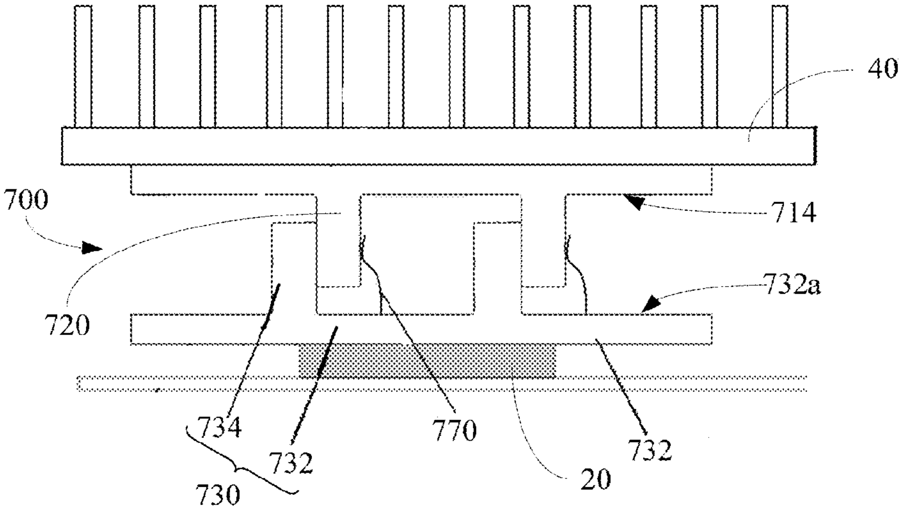


FIG. 9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20
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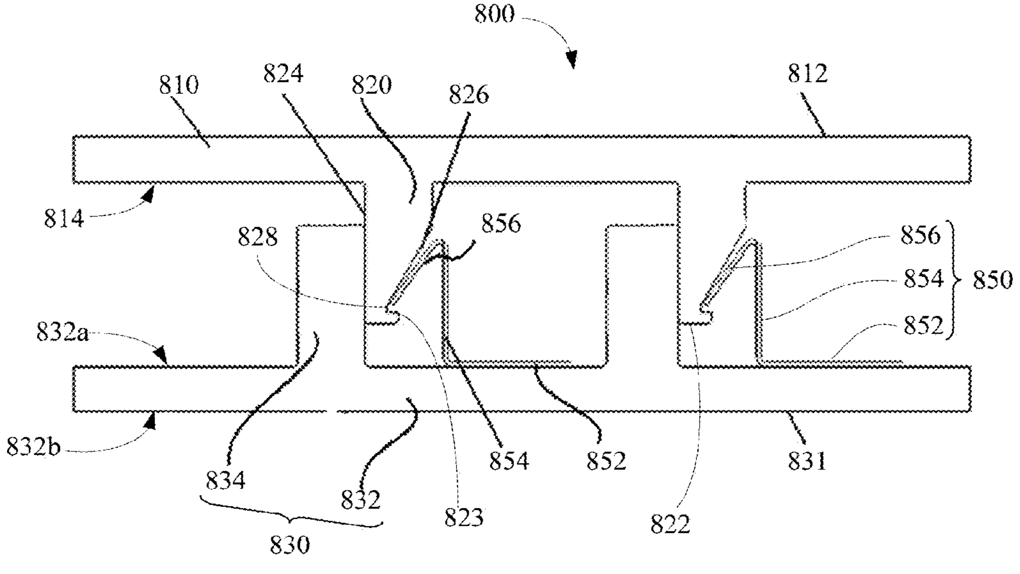
FIG. 10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812
814
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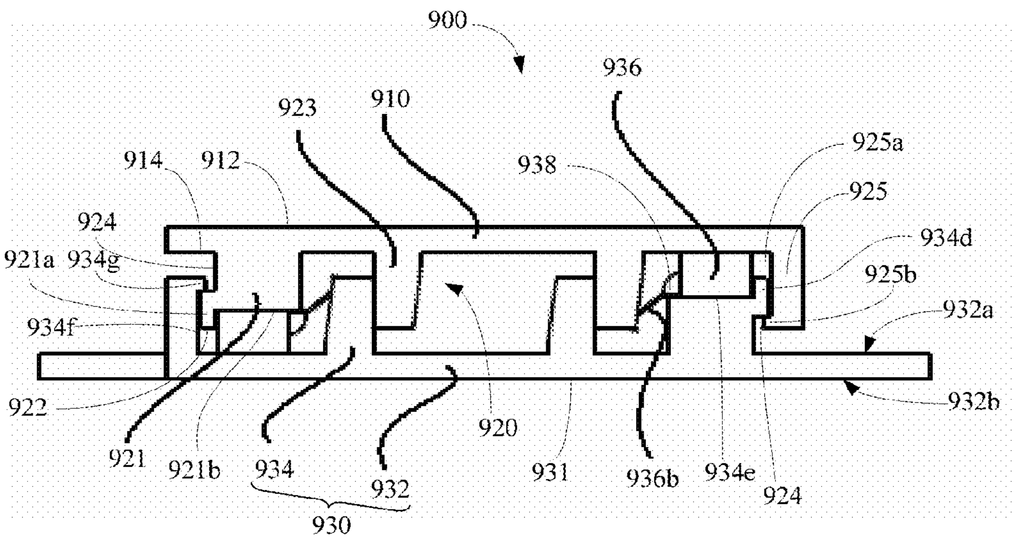
854
852
831
823
822
830

FIG. 11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910
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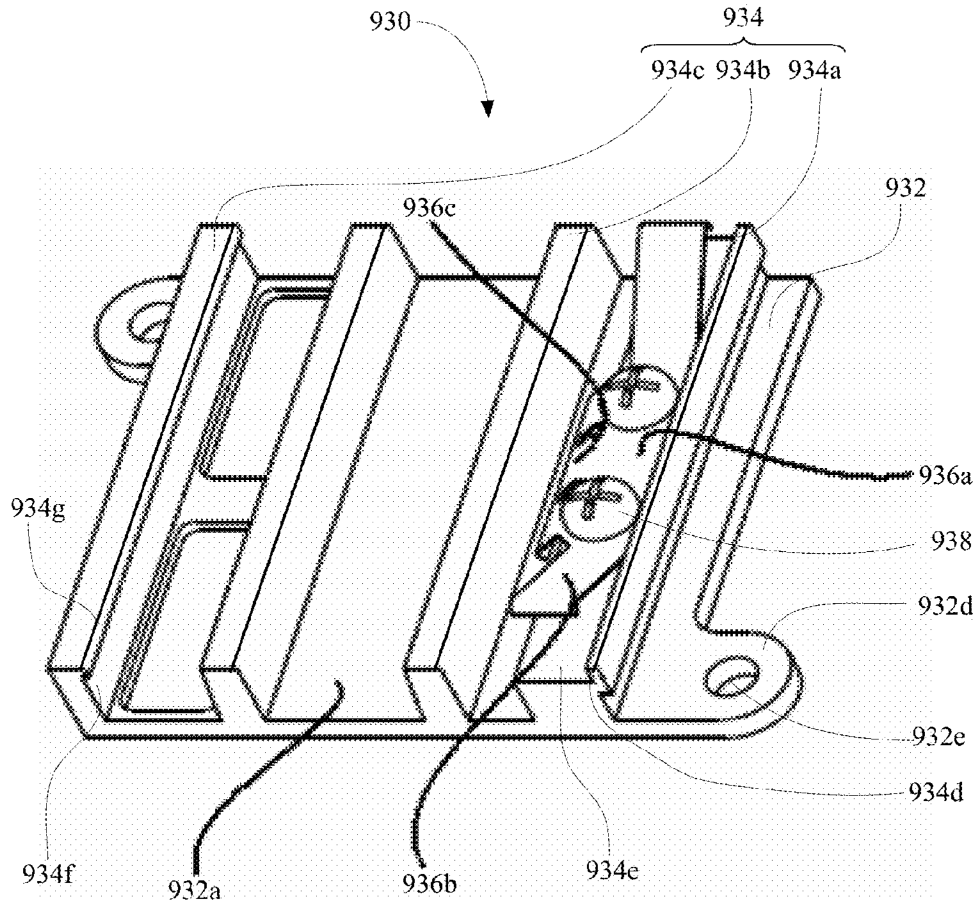
912
938
925
924
934d
921a
934g
925b
932a
934f
922
932b
920
921
921b
934
932
931
936b
934e
924
930

FIG. 12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934f
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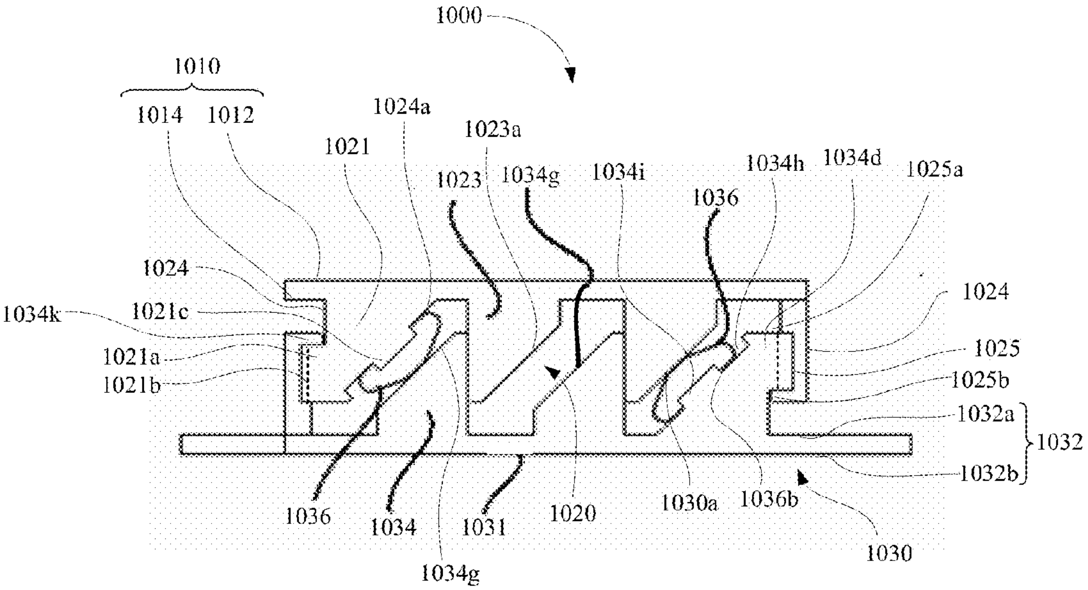
936b
934e

FIG. 13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1012
1024a
1021
1023a
1023
1034g
1034i
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1034d
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1021c
1021a
1021b
1024
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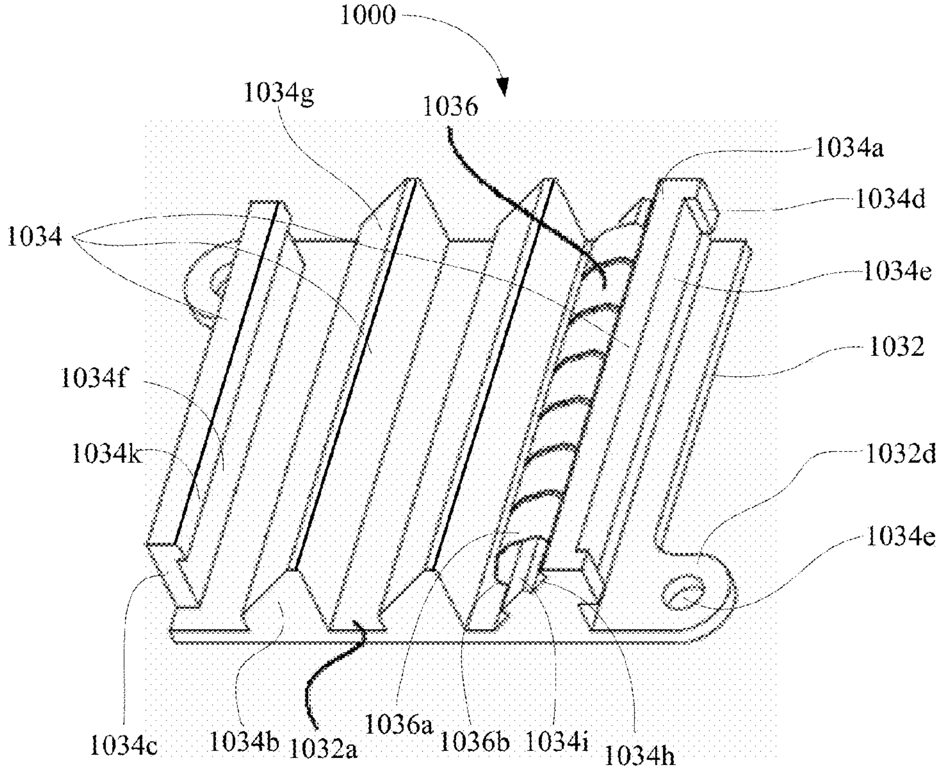
1036b
1030
1034g

FIG. 14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1034b
1032a
1036a
1036b
1034i
1034h

FIG. 15

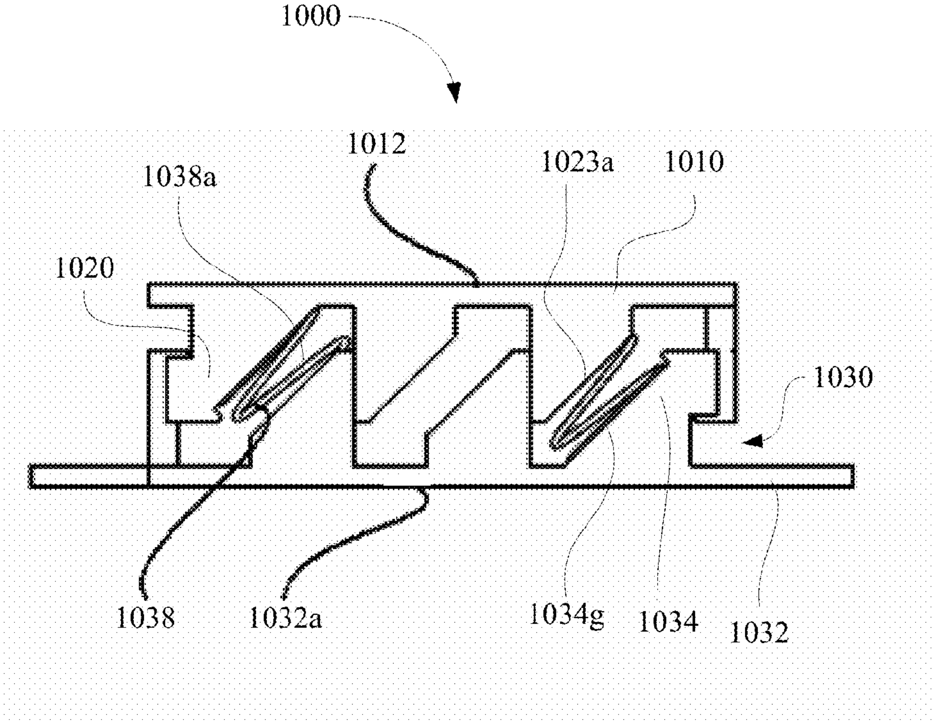
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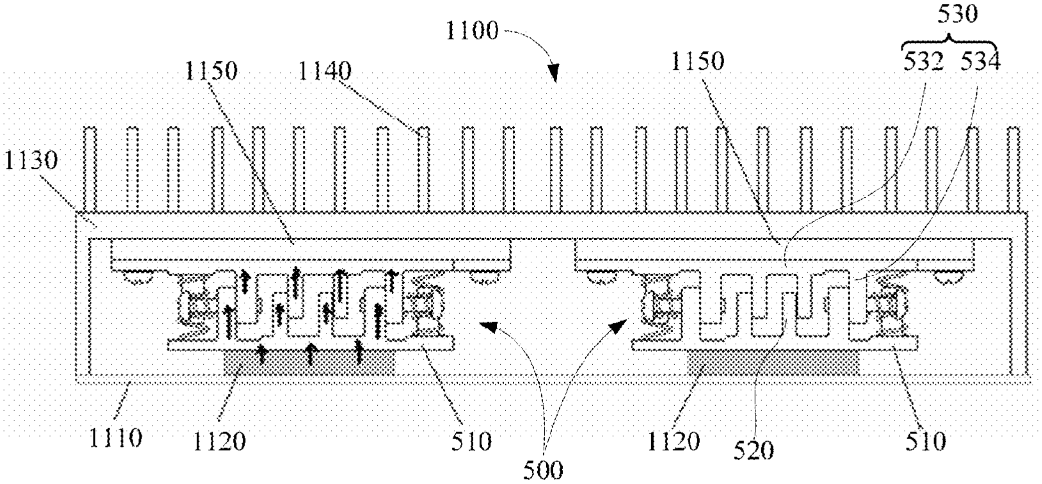
FIG. 16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500
1120
520
510

FIG. 17

HEAT CONDUCTING DEVICE AND ELECTRONIC DEVICE APPLYING THE SAME

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of International Patent Application No. PCT/CN2011/074077, filed on May 16, 2011, which claims priority to Chinese Patent Application No. 201010539924.0, filed on Nov. 11, 2010, both of which are hereby incorporated by reference in their entireties.

TECHNICAL FIELD

[0002] The present invention relates to a heat conducting device, and more specifically, to a heat conducting device applicable in electronic devices.

DESCRIPTION OF THE RELATED ART

[0003] In current electronic devices, with the continuous abundant of functions, corresponding power consumption is constantly increasing, as a result, heat dispersion of electronic devices has become an important issue restricting the development of electronic devices. In order to enable heat produced in an electronic product to transfer to a heat dispersion device in time, a heat conducting medium is generally provided between the heat source of the electronic product and the heat dispersion device, so that heat produced from the heat source of the electronic product may be conducted to the heat dispersion device.

[0004] In the implementation of this invention, the inventors have recognized at least the following problems in the prior art.

[0005] Due to manufacture errors, the distance between the heat source of an electronic product and an heat dispersion device is not constant, which may vary in a certain range. However, most existing heat conducting mediums are unable to self-adapt to an appropriate thickness to fit variations in distance between the heat source and the heat dispersion device, leading to higher thermal resistance between the heat source and the heat dispersion device, preventing rapid heat conduction consequently.

SUMMARY OF THE INVENTION

[0006] A heat conducting device with high thermal conductivity and reliability and an electronic device applying the same heat conducting device are provided in embodiments of this invention.

[0007] A heat conducting device, comprising a first heat conducting board and a heat conducting structure is provided. The first heat conducting board comprises an upper heat conducting arm provided on one surface of the first heat conducting board. The heat conducting structure slidably abuts on the upper heat conducting arm of the first heat conducting board to form a contact surface through which heat transfer is realized. The heat conducting structure comprises a heat conducting surface, which is used to keep the relative position of the first heat conducting board and the heat conducting surface. The distance between the first heat conducting board and the heat conducting surface of the heat conducting structure may be varied by means of relative sliding between the upper heat conducting arm and the heat conducting structure, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm of the first heat conducting board and the heat conducting structure.

[0008] An electronic device applying the above heat conducting device is provided. The electronic device comprises a circuit board, multiple chips provided on the circuit board, a heat dispersing shield provided on the circuit board for accommodating the chips, a heat dispersion device provided on the heat dispersing shield, and multiple heat conducting devices. The multiple heat conducting devices are provided between the chips and the heat dispersing shield. First heat conducting boards of the heat conducting devices are closely adhered to the chips, the heat conducting structures of the heat conducting devices tightly abut on the heat dispersing shield through their heat conducting surfaces.

[0009] The heat conducting device and the electronic device applying the heat conducting device provided in embodiments of this invention may adjust its own thickness through sliding between an upper heat conducting arm and a lower heat conducting arm according to different use environments and manufacture errors to fit variations in distance between a heat source and a heat dispersing structure, so that effective heat conduction of electronic products can be guaranteed and heat dispersion effect can be improved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. **1** is a side view of a heat conducting device provided according to a first embodiment of this invention;

[0011] FIG. **2** is a side view of a heat conducting device provided according to a second embodiment of this invention;

[0012] FIG. **3** is a side view of a heat conducting device provided according to a third embodiment of this invention;

[0013] FIG. **4** is a side view of a heat conducting device provided according to a fourth embodiment of this invention;

[0014] FIG. **5** is a side view of a heat conducting device provided according to a fifth embodiment of this invention;

[0015] FIG. **6** is a perspective exploded view of a heat conducting device provided according to the fifth embodiment of this invention;

[0016] FIG. **7** is a side view of a heat conducting device provided according to a sixth embodiment of this invention;

[0017] FIG. **8** is a side view of a heat conducting device provided according to a seventh embodiment of this invention;

[0018] FIG. **9** is a side view of another heat conducting device provided according to the seventh embodiment of this invention;

[0019] FIG. **10** is a side view of a third heat conducting device provided according to the seventh embodiment of this invention;

[0020] FIG. **11** is a side view of a heat conducting device provided according to an eighth embodiment of this invention;

[0021] FIG. **12** is a side view of a heat conducting device provided according to a ninth embodiment of this invention;

[0022] FIG. **13** is a perspective schematic view of the heat conducting structure of the heat conducting device of FIG. **12**;

[0023] FIG. **14** is a side view of a heat conducting device provided according to a tenth embodiment of this invention;

[0024] FIG. **15** is a perspective schematic view of the heat conducting structure of the heat conducting device of FIG. **14**;

[0025] FIG. **16** is a side view of another heat conducting device provided according to the tenth embodiment of this invention;

[0026] FIG. **17** is a side view of another electronic device provided according to the eleventh embodiment of this invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0027] Referring to FIG. **1**, FIG. **1** is a side view of a heat conducting device **100** provided in a first embodiment of this invention. The heat conducting device **100** comprises a first heat conducting board **110** and a heat conducting structure **130**. The first heat conducting board **110** comprises at least one upper heat conducting arm **120** provided on a side surface of the first heat conducting board **110**. The heat conducting structure **130** slidably abuts on the upper heat conducting arm **120** of the first heat conducting board **110** to form a contact surface through which heat transfer is performed. The heat conducting structure **130** comprises a heat conducting surface **131** contacting with a heat source or a heat dispersion device, the heat conducting structure **130** is used to keep a relative position of the first heat conducting board **110** and the heat conducting surface **131**, and the distance between the first heat conducting board **110** and the heat conducting surface **131** of the heat conducting structure **130** may be varied by means of relative sliding between the upper heat conducting arm **120** and the heat conducting structure **130**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm **120** of the first heat conducting board **110** and the heat conducting structure **130**.

[0028] The first heat conducting board **110** comprises a first surface **112** and a second surface **114** opposite to the first surface **112**. The upper heat conducting arm **120** is formed on the second surface **114** of the first heat conducting board **110**. It may be understood that the upper heat conducting arm **120** may be integrally formed with the first heat conducting board **110** or may be manufactured separately and then mounted to the first heat conducting board **110** through weld, screw connection, or other mechanical connection mannerThe first heat conducting board **110** and the upper heat conducting arm **120** are both formed by a metal with good thermal conductivity such as copper, aluminum, or a non-metal solid material such as graphite, boron nitride, and aluminum nitride, etc.

[0029] Each of the upper heat conducting arms **120** comprises an end surface **122** and a side surface **124** perpendicularly surrounding the periphery of the end surface **122**. Because the end surface **122** is perpendicular to the side surface **124**, the shape of the end surface **122** may reflect the shape of the cross section of the upper heat conducting arm **120**, the end surface **122** of the upper heat conducting arm **120** may be arranged to any shape as demand, for example, a regular polygon such as an equiangular triangle, a square, a rectangle, or an irregular polygon or a circle, an ellipse, etc. In this embodiment, the side surface **124** of the upper heat conducting arm **120** and the heat conducting structure **130** abut with each other.

[0030] In this embodiment, the heat conducting structure **130** comprises a second heat conducting board **132** and multiple groups of lower heat conducting arms **134** formed on the second heat conducting board **132** and mutually abutted with the upper heat conducting arms **120**. The second heat conducting board **132** comprises an upper surface **132***a* and a lower surface **132***b* opposite to the upper surface **132***a*. In this embodiment, the heat conducting surface **131** and the lower surface **132***b* of the second heat conducting board **132** are the same surface. The lower heat conducting arms **134** are provided on the upper surface **132***a* of the second heat conducting board **132** and form an angle with the upper surface **132***a*, wherein the angle has an optimal value of **90** degrees. Each group of the lower heat conducting arms **134** comprises two heat conducting reeds **134***a*, **134***b* having the same structure and symmetrically provided on the upper surface **132***a* of the second heat conducting board **132**. For concision, the structure of heat conducting reeds **134***a*, **134***b* will be described with the heat conducting reed **134***a* as an example. Each of the heat conducting reeds **134***a* comprises a support portion **134***c* and a resilient portion **134***d* formed at one end of the support portion **134***c*. The support portion **134***c* comprises a fixed end **134***e* and a free end **134***f* corresponding to the fixed end **134***e*. The support portion **134***c* is fixed on the upper surface **132***a* of the second heat conducting board **132** via fixed end **134***e* of the support portion **134***c*. The resilient portion **134***d* is coupled on the free end **134***f* of the support portion **134***c* and forms an angle with the support portion **134***c*, preferably, a sharp angle. The resilient portions **134***d* of the two heat conducting reeds **134***a*, **134***b* of each group of lower heat conducting arms **134** face with each other and are spaced with a distance to form a receiving space **136** for receiving an upper heat conducting arm **120**. In this embodiment, the lower heat conducting arms **134** are formed by beryllium bronze, spring steal, etc. It can be understood that the lower heat conducting arm **134** and the upper heat conducting arms **120** are exchangeable in position, that is, the lower heat conducting arms **134** can be provided on the second surface **114** of the first heat conducting board **110** and the upper heat conducting arms **120** can be correspondingly provided on the upper surface **132***a* of the second heat conducting board **132**.

[0031] In use, an upper heat conducting arm **120** on the first heat conducting board **110** corresponds to a corresponding group of heat conducting reeds **134***a*, **134***b* on the heat conducting structure **130**, and the end surface **122** of the upper heat conducting arm **120** is abutted against the resilient portions **134***d* of the heat conducting reeds **134***a*, **134***b*. Then, a prepressure is applied on the first heat conducting board **110** to insert the upper heat conducting arm **120** into the receiving space **136** of a corresponding lower heat conducting arm **134**. Under the pressure, the resilient portion **134***d* of each of the heat conducting reeds **134***a*, **134***b* resilientally bends in the direction of the support portion **134***c*, and the bent resilient portion **134***d* closely abut against the side surface **124** of the upper heat conducting arm **120** to keep effective heat transfer through a contact surface between the heat conducting reeds **134***a*, **134***b* and the upper heat conducting arm **120**, at the same time, to keep a relative position between the heat conducting surface **131** of the heat conducting structure **130** and the first heat conducting board **110**. When the distance between the heat conducting surface **131** of the heat conducting structure **130** and the first heat conducting board **110** is required to be adjusted, it is only needed to apply a pressure on the first heat conducting board **110** or release the pressure applied on the first heat conducting board **110** to realize the adjustment of the distance between the heat conducting surface **131** of the heat conducting structure **130** and the first heat conducting board **110** through relative sliding between the heat conducting structure **130** and the first heat conducting board **110**. When such a heat conducting device **100** is used in an electronic device, accumulative tolerances produced in the manufacture of the electronic device can be compensated to achieve the purpose of facilitating assembly and manufacture, at the same time, the effectiveness of the heat conducting path can be guaranteed, and heat dispersion effect can be improved during the use of the electronic product.

[0032] Referring to FIG. **2**, FIG. **2** is a side view of a heat conducting device **200** provided according to a second embodiment of this invention. The structure of the heat conducting device **200** is similar to that of the heat conducting device **100** of the first embodiment, comprising a first heat conducting board **210** and a heat conducting structure **230**, wherein the first heat conducting board **210** comprises at least one upper heat conducting arm **220** provided on one side surface of the first heat conducting board **210**. The heat conducting structure **230** is directly aligned to the upper heat conducting arm **220** of the first heat conducting board **210** and slidably abuts against the upper heat conducting arm **220** to perform heat transfer through the contact surface between the heat conducting structure **230** and the upper heat conducting arm **220**. The heat conducting structure **230** comprises a heat conducting surface **231**, the heat conducting structure **230** is used to keep the relative position between the first heat conducting board **210** and the heat conducting surface **231**, and the distance between the first heat conducting board **210** and the heat conducting surface **231** of the heat conducting structure **230** can be varied by means of relative sliding between the upper heat conducting arm **220** and the heat conducting structure **230**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm **220** of the first heat conducting board **210** and the heat conducting structure **230**. The heat conducting device **200** provided in the second embodiment differs from the heat conducting device **100** provided in the first embodiment in the following aspects.

[0033] In this embodiment, each upper heat conducting arm **220** comprises two structure symmetric resilient sheets **222**, wherein each resilient sheet **222** comprises a connecting segment **222***a* and an abutting segment **222***b* connected to the connecting segment **222***a*. The connecting segment **222***a* is connected to a second surface **114** of the first heat conducting board **210** at one end and forms an angle with the second surface **114**, optimally an angle of 90 degrees. The abutting segment **222***b* is connected to the end of the connecting segment **222***a* apart from the first heat conducting board **210**, and forms an angle with the connecting segment **222***a*, preferably, a sharp angle. The two resilient sheets **222** of each upper heat conducting arm **220** are symmetrically arranged on the second surface **214** of the first heat conducting board **210**, and the abutting segments **222***b* of the two resilient sheets **222** are located on departure sides of the two connecting segment **222***a* of the two resilient sheets **222** respectively, so that a taper with a cross section gradually reduced along the direction of from a position close to the first heat conducting board **210** toward a position apart from the first heat conducting board **210** is formed.

[0034] In this embodiment, the heat conducting structure **230** comprises a second heat conducting board **232** and multiple groups of lower heat conducting arms **234** formed on the second heat conducting board **232** and mutually abutted with the upper heat conducting arms **220**. The second heat conducting board **232** comprises an upper surface **232***a* and a lower surface **232***b* opposite to the upper surface **232***a*. In this embodiment, the heat conducting surface **231** and the lower surface **232***b* of the second heat conducting board **232** are the same surface. The lower heat conducting arms **234** are provided on the upper surface **232***a* of the second heat conducting board **232** and form an angle with the upper surface **232***a*, optimally an angle of 90 degrees. Each group of the lower heat conducting arms **234** comprises two heat conducting reeds **234***a*, **234***b* having the same structure and symmetrically arranged on the upper surface **232***a* of the second heat conducting board **232**. In this embodiment, the heat conducting reeds **234***a*, **234***b* are leaf springs perpendicularly provided on the second heat conducting board **232** and spaced with a distance to form a receiving space **236** for receiving an upper heat conducting arm **220**. In this embodiment, each of the upper heat conducting arms **220** and lower heat conducting arms **234** is formed by a resilient material such as beryllium bronze, spring steal, etc. It can be understood that the lower heat conducting arms **234** and the upper heat conducting arms **220** are exchangeable in position, that is, the lower heat conducting arms **234** can be provided on the second surface **114** of the first heat conducting board **210** and the upper heat conducting arms **220** can be correspondingly provided on the upper surface **232***a* of the second heat conducting board **232**.

[0035] In use, each upper heat conducting arm **220** on the first heat conducting board **210** corresponds to a corresponding group of heat conducting reeds **234***a*, **234***b* on the heat conducting structure **230** to abut the abutting segments **222***b* of the upper heat conducting arm **220** against the heat conducting reeds **234***a*, **234***b*. Then, a prepressure is applied on the first heat conducting board **210** to insert the upper heat conducting arm **220** into the receiving space **236** of the corresponding lower heat conducting arm **234**. The resilient sheets **222** of the upper heat conducting arm **220** and the heat conducting reeds **234***a*, **234***b* mutually abutted with the resilient sheets **222** produce a resilient deformation under the prepressure, a resilient restoring force produced by the resilient deformation make the abutting segments **222***b* of the upper heat conducting arm **220** closely abutted against the heat conducting reeds **234***a*, **234***b*, so as to keep effective heat transfer through a contact surface between the heat conducting reeds **234***a*, **234***b* and the resilient sheets **222**, at the same time, to keep the relative position between the heat conducting surface **231** of the heat conducting structure **230** and the first heat conducting board **210**. When the distance between the heat conducting surface **231** of the heat conducting structure **230** and the first heat conducting board **210** is required to be adjusted, it is only needed to apply a pressure on the first heat conducting board **210** or release the pressure applied on the first heat conducting board **210** to realize the adjustment of the distance between the heat conducting surface **231** of the heat conducting structure **230** and the first heat conducting board **210** through relative sliding between the heat conducting structure **230** and the first heat conducting board **210**. When such a heat conducting device **200** is used in an electronic device, accumulative tolerances produced in the manufacture of the electronic device can be compensated. Furthermore, position adjustment and heat transfer functions are realized through employing correspondingly provided resilient sheets **222** and heat conducting reeds **234***a*, **234***b*, making the whole heat conducting device **200** lightened and simplified in structure.

[0036] Referring to FIG. **3**, FIG. **3** is a side view of a heat conducting device **300** provided according to a third embodiment of this invention. The structure of the heat conducting device **300** is similar to that of the heat conducting device **100** of the first embodiment, comprising a first heat conducting board **310** and a heat conducting structure **330**, wherein the first heat conducting board **310** comprises at least one upper heat conducting arm **320** provided on a side surface of the first heat conducting board **310**. The heat conducting structure **330** is directly aligned to the upper heat conducting arm **320** of the first heat conducting board **310** and slidably abuts against the upper heat conducting arm **320** to perform heat transfer through the contact surface between the heat conducting structure **330** and the upper heat conducting arm **320**. The heat conducting structure **330** comprises a heat conducting surface **331** and is used to keep a relative position between the first heat conducting board **310** and the heat conducting surface **331**. The distance between the first heat conducting board **310** and the heat conducting surface **331** of the heat conducting structure **330** can be varied by means of relative sliding between the upper heat conducting arm **320** and the heat conducting structure **330**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm **320** of the first heat conducting board **310** and the heat conducting structure **330**. The heat conducting device **300** provided in the third embodiment differs from the heat conducting device **100** provided in the first embodiment in the following aspects.

[0037] In this embodiment, multiple heat dispersing fins are constructed, which are regularly arranged on a first surface **312** of the first heat conducting board **310** and are used to rapidly disperse heat of the first heat conducting board **310** to the surrounding medium.

[0038] In this embodiment, a taper side **326** is formed between the end surface **322** and side surface **324** of each upper heat conducting arm **320**, which is connected between the side surface **324** and the end surface **322** with a connection angle, preferably a blunt angle.

[0039] In this embodiment, the heat conducting structure **330** comprises at least one mutually separated boom-type lower heat conducting arm **334**. The multiple lower heat conducting arms **334** have the same structure, each of which comprises a locating segment **334***a,* two resilient segments **334***b* connected to the opposite sides of the locating segment **334***a* respectively, and two resilient boom segments **334***c* connected to corresponding ends of the resilient segments **334***b.* The bottom of the locating segment **334***a* forms the heat conducting surface **331**. The two resilient segments **334***b* are connected to the opposite sides of the locating segment **334***a* with a certain angle. In order to make the resilient segments **334***b* resilient enough, the middle portions of the two resilient segments **334***b* are folded in opposite directions to form energy storage portions **334***d.* The two resilient boom segments **334***c* are connected to one the ends of the resilient segments **334***b* apart from the locating segment **334***a* by means of substantially parallel to the locating segment **334***a,* and are opposite to each other. It may be understood that the two resilient boom segments **334***c* may have their corresponding ends connected to form an integral structure which is connected to the resilient segments **334***b* at two ends.

[0040] In use, each upper heat conducting arm **320** on the first heat conducting board **310** corresponds to two resilient boom segments **334***c* of the heat conducting structure **330**, and the end surface **322** of the each upper heat conducting arm **320** is abutted against the resilient boom segments **334***c*. Then, a prepressure is applied on the first heat conducting board **310** to insert the upper heat conducting arm **320** between the two resilient segments **334***b* of the corresponding boom-type lower heat conducting arm **334**. The resilient boom segments **334***c* of the boom-type lower heat conducting arm **334** produce a resilient deformation toward the locating segment **334***a* under the prepressure. At that point, the taper side **326** formed on the upper heat conducting arm **320** is closely abutted against the folded resilient boom segments **334***c,* so that the upper heat conducting arm **320** sufficiently contacts the heat conducting structure **330** to guarantee effective heat transfer through the contact surface between the upper heat conducting arm **320** and the heat conducting structure **330**, at the same time, to keep a relative position between the heat conducting surface **331** of the heat conducting structure **330** and the first heat conducting board **310**. It is only needed to apply a pressure on the first heat conducting board **310** or release the pressure applied on the first heat conducting board **310** to realize the adjustment of the distance between the heat conducting surface **331** of the heat conducting structure **330** and the first heat conducting board **310** through relative sliding between the heat conducting structure **330** and the first heat conducting board **310**. When such a heat conducting device **300** is used in an electronic device, accumulative tolerances produced in the manufacture of the electronic device can be compensated. Furthermore, the multiple mutually separated boom-type lower heat conducting arm **334** on the heat conducting structure **330** have their own locating segments **334***a,* so that such a heat conducting structure **330** can be applied in an electronic device having multiple separated heat sources simultaneously to simplify the heat dispersing structure and reduce manufacture cost.

[0041] Referring to FIG. **4**, FIG. **4** is a side view of a heat conducting device **400** provided according to a fourth embodiment of this invention. The structure of the heat conducting device **400** is similar to that of the heat conducting device **300** of the third embodiment, comprising a first heat conducting board **410** and a heat conducting structure **430**, wherein the first heat conducting board **410** comprises two upper heat conducting arms **420** spaced at a distance and provided on a side surface of the first heat conducting board **410**. The heat conducting structure **430** is directly aligned to the upper heat conducting arms **420** of the first heat conducting board **410** and slidably abuts against the upper heat conducting arm **420** to perform heat transfer through the contact surface between the heat conducting structure **430** and the upper heat conducting arms **420**. The heat conducting structure **430** comprises a heat conducting surface **431** and is used to keep a relative position between the first heat conducting board **410** and the heat conducting surface **431**. The distance between the first heat conducting board **410** and the heat conducting surface **431** of the heat conducting structure **430** can be varied by means of relative sliding between the upper heat conducting arms **420** and the heat conducting structure **430**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arms **420** of the first heat conducting board **410** and the heat conducting structure **430**. The heat conducting device **400** provided in the fourth embodiment differs from the heat conducting device **300** provided in the third embodiment in the following aspects.

[0042] In this embodiment, the heat conducting structure **430** comprises multiple mutually separated boom-type lower heat conducting arms **434**. The multiple boom-type lower heat conducting arms **434** have the same structure, and correspond to spacing regions between the multiple upper heat conducting arms **420** of the first heat conducting board **410**. Each of the lower heat conducting arms **434** comprises a locating segment **434***a*, two resilient segments **434***b* connected to the opposite sides of the locating segment **434***a* respectively, and two resilient boom segments **434***c* connected to corresponding ends of the resilient segments **434***b*. The bottom of the locating segment **434***a* forms the heat conducting surface **431**. The two resilient segments **434***b* are connected to the opposite sides of the locating segment **434***a* with a certain angle. The two resilient boom segments **434***c* are connected to the ends of the resilient segments **434***b* apart from the locating segment **434***a* along departure directions and are folded toward the locating segment **434***a*.

[0043] In use, each upper heat conducting arm **420** on the first heat conducting board **410** corresponds to adjacent resilient boom segments **434***c* of two adjacent boom-type lower heat conducting arms **434** of the heat conducting structure **430**, and the end surface **422** of the upper heat conducting arm **420** is abutted against the resilient boom segments **434***c*. Then, a prepressure is applied on the first heat conducting board **410** to insert the upper heat conducting arm **420** between the two adjacent boom-type lower heat conducting arms **434**. The resilient boom segments **434***c* of the adjacent boom-type lower heat conducting arm **434** produce a resilient deformation toward the locating segment **434***a* under the prepressure. At that point, a taper side **426** formed on the upper heat conducting arm **420** is closely abutted against the folded resilient boom segments **434***c* to cause sufficiently contact between the upper heat conducting arm **420** and the heat conducting structure **430**, so as to guarantee effective heat transfer through the contact surface between the upper heat conducting arm **420** and the heat conducting structure **430**, and keep a relative position between the heat conducting surface **431** of the heat conducting structure **430** and the first heat conducting board **410** at the same time. The adjustment manner of the heat conducting device **400** provided in this embodiment is as same as that of the heat conducting device **300** provided in the third embodiment, and have the same advantages as the heat conducting device **300**.

[0044] Referring to FIG. **5**, FIG. **5** is a side view of a heat conducting device **500** provided according to a fifth embodiment of this invention. The heat conducting device **500** comprises a first heat conducting board **510** and a heat conducting structure **530**, wherein the first heat conducting board **510** comprises at least one upper heat conducting arm **520** provided on a side surface of the first heat conducting board **510**. The heat conducting structure **530** is directly aligned to the upper heat conducting arm **520** of the first heat conducting board **510** and slidably abuts against the upper heat conducting arm **520** to perform heat transfer through the contact surface between the heat conducting structure **530** and the upper heat conducting arms **520**. The heat conducting structure **530** comprises a heat conducting surface **531** and is used to keep a relative position between the first heat conducting board **510** and the heat conducting surface. The distance between the first heat conducting board **510** and the heat conducting surface **531** of the heat conducting structure **530** can be varied by means of relative sliding between the upper heat conducting arms **520** and the heat conducting structure **530**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arms **520** of the first heat conducting board **510** and the heat conducting structure **530**.

[0045] The first heat conducting board **510** comprises a first surface **512** and a second surface **514** opposite to the first surface **512**. Two first locating posts **516** are formed on the second surface **514** of the first heat conducting board **510**, in this embodiment, the locating posts **516** are formed on the second surface **514** at positions close to an edge of the second surface **514**, but not limited to the above positions, the locating posts **516** can be provided on the second surface **514** at any required positions capable of ensuring the normal use of the heat conducting device **500**.

[0046] This embodiment comprises multiple upper heat conducting arms **520** spaced at a certain distance and distributed on the first heat conducting board **510**. The multiple upper heat conducting arms **520** are multiple plate structures provided on the second surface **514** of the first heat conducting board **510** in parallel. It may be understood that the upper heat conducting arms **520** may be integrally formed with the first heat conducting board **510**, or may be separately manufactured and then mounted to the first heat conducting board **510** through weld, screw connection or adherence. The first heat conducting board **510** and the upper heat conducting arms **520** are formed by a metal with good thermal conductivity such as copper, aluminum, or a non-metal solid material such as graphite, boron nitride, and aluminum nitride, etc.

[0047] Referring to FIG. **6** also, FIG. **6** is a perspective exploded view of a heat conducting device **500** provided according to the fifth embodiment of this invention. Each of the upper heat conducting arms **520** comprises an end surface **522** and a side surface **524** perpendicularly surrounding the periphery of the end surface **522**. Because the end surface **522** is perpendicular to the side surface **524**, the shape of the end surface **522** may represent the shape of the cross section of the upper heat conducting arm **520**, the end surface **522** of the upper heat conducting arm **520** may be arranged to any shape as required, for example a regular polygon such as an equiangular triangle, a square, a rectangle, or an irregular polygon or a circle, an ellipse, etc. In this embodiment, the side surface **524** of the upper heat conducting arm **520** is abutted against the heat conducting structure **530**. In this embodiment, multiple first screw holes **526** and multiple first sliding holes **528** are provided on two outermost upper heat conducting arms **520** among the multiple upper heat conducting arms **520**, wherein the first screw holes **526** are provided on a same upper heat conducting arm **520** and the first sliding holes **528** are provided on the other upper heat conducting arm **520**.

[0048] In this embodiment, the heat conducting structure **530** comprises a second heat conducting board **532**, multiple lower heat conducting arms **534** formed on the second heat conducting board **532**, multiple resilient elements **536** and multiple locking elements **538**.

[0049] The second heat conducting board **532** comprises an upper surface **532***a* and a lower surface **532***b* opposite to the upper surface **532***a*. In this embodiment, the heat conducting surface **531** and the lower surface **532***b* of the second heat conducting board **532** are the same surface. Two second locating posts **532***c* are formed on the upper surface **532***a* of the second heat conducting board **532**, which are symmetrically distributed in space with the first locating posts **516** on the first heat conducting board **510**, that is, the orthogonal projections of the first locating posts **516** and the second locating posts **532***c* on a plane where the second surface **514** of the first heat conducting board **510** locates are symmetrically distributed with respect to the geometric center of the second surface **514**. The second heat conducting board **532** is square in shape, and two lips **532***d* are formed at diagonal positions of the second heat conducting board **532**, with two through holes **532***e* provided on the two lips **532***d* for securing the second heat conducting board **532** to an attachment, such as a heat source or a heat dispersing shield in an electronic device, by fasteners passing through the through holes **532***e*. It may be understood that the lips **532***d* can be arranged on the second heat conducting board **532** at any positions, so long as they are symmetrical in structure such that the second heat conducting board **532** can be steadily mounted on an attachment.

[0050] The multiple lower heat conducting arms **534** are disposed on the upper surface **532***a* of the second heat conducting board **532** in the same arrangement as the upper heat conducting arms **520**. Two outermost lower heat conducting arms **534** of the multiple lower heat conducting arms **534** are provided with second sliding holes **534***a* and second screw holes **534***b* corresponding to the first screw holes **526** and the first sliding holes **528** on the upper heat conducting arms **520** respectively, wherein the hole diameter of the first sliding holes **528** and the second sliding holes **534***a* is larger than the hole diameter of the first screw holes **526** and second screw holes **534***b*, and the first sliding holes **528** and the second sliding holes **534***a* extend a distance along a direction vertical to the first heat conducting board **510** to form elongate holes with a run space.

[0051] In this embodiment, the resilient elements **536** comprise multiple first limit resilient elements **536***a* and multiple second limit resilient elements **536***b*. The multiple first limit resilient elements **536***a* are used to set around the first locating posts **516** and the second locating posts **532***c* to keep a distance between the first heat conducting board **510** and the heat conducting surface **531** of the heat conducting structure **530**. The multiple second limit resilient elements **536***b* are used to match the locking elements **538** to ensure that the upper heat conducting arms **520** and the lower heat conducting arms **534** are closely abutted with each other all the time. In this embodiment, the resilient elements **536** are coil springs.

[0052] In this embodiment, the locking elements **538** are bolts, which are used to slidably connect the first heat conducting board **510** and heat conducting structure **530**.

[0053] When assembled, first of all, the first limit resilient elements **536***a* are set around the first locating posts **516** and the second locating posts **532***c* respectively, then the first heat conducting board **510** is directly covered on the heat conducting structure **530** such that the upper heat conducting arm **520** and lower heat conducting arms **534** are alternately arranged, wherein the multiple upper heat conducting arm **520** are located on the same side of the lower heat conducting arms **534**. Next, a pressure is applied on the first heat conducting board **510** to cause a resilient deformation of the first limit resilient elements **536***a* to store an amount of elastic potential energy, an elastic force is provided by the elastic potential energy stored in the first limit resilient elements **536***a* to keep the position relationship between the first heat conducting board **510** and the heat conducting structure **530**. At the same time, the first screw holes **526** and the first sliding holes **528** on the upper heat conducting arm **520** are aligned with the second sliding holes **534***a* and the second screw holes **534***b* on the lower heat conducting arms **534**. Then, the locking elements **538** setting around second limit resilient elements **536***b* are locked into the first screw holes **526** and the second screw holes **534***b*, and ensure that the locking elements **538** pass into the first sliding holes **528** and the second sliding holes **534***a*, so that the upper heat conducting arms **520** and the lower heat conducting arms **534** move in the travel distance defined by the first sliding holes **528** and the second sliding holes **534***a*. A pretightening force is applied on the locking elements **538**, so that the second limit resilient elements **536***b* set around the locking elements **538** produce a resilient deformation to store an amount of elastic potential energy. The second limit resilient elements **536***b* provide a force applied on the upper heat conducting arms **520** and the lower heat conducting arms **534** through the elastic potential energy stored in the second limit resilient elements **536***b* to cause a trend of closing to each other of the upper heat conducting arms **520** and the lower heat conducting arms **534**, to ensure that the upper heat conducting arms **520** and the lower heat conducting arms **534** closely contact all the time to realize heat transfer.

[0054] With the heat conducting device **500** provided in this embodiment, the relative position between the heat conducting surface **531** of the heat conducting structure **530** and the first heat conducting board **510** is kept through the locking elements **538** and the first limit resilient elements **536***a*. When the distance between the heat conducting surface **531** of the heat conducting structure **530** and the first heat conducting board **510** is required to be adjusted, it is only needed to apply a pressure on the first heat conducting board **510** or release the pressure applied on the first heat conducting board **510** to realize the adjustment of the distance between the heat conducting structure **530** and the first heat conducting board **510**, so that accumulative tolerances produced in the manufacture of the electronic device can be compensated. Furthermore, through providing lower heat conducting arms **534** on second heat conducting board **532** which are abutted against upper heat conducting arms **520**, the heat conducting device provided in this embodiment may increase the contact surface for heat transfer between the heat conducting structure **530** and the first heat conducting board **510**, so that thermal resistance is reduced, and heat dispersion efficiency is further improved.

[0055] Referring to FIG. **7**, FIG. **7** is a side view of a heat conducting device **600** provided according to a sixth embodiment of this invention. The structure of the heat conducting device **600** is similar to that of the heat conducting device **500** provided in the fifth embodiment, comprising a first heat conducting board **610** and a heat conducting structure **630**. The first heat conducting board **610** comprises at least one upper heat conducting arm **620** provided on one side surface of the first heat conducting board **610**. The heat conducting structure **630** directly faces the upper heat conducting arm **620** of the first heat conducting board **610** and slidably abuts against the upper heat conducting arm **620** to perform heat transfer through the contact surface between a lower heat conducting arm **634** on the heat conducting structure **630** and the upper heat conducting arm **620**. The heat conducting structure **630** comprises a heat conducting surface **631** and is used to keep the relative position between the first heat conducting board **610** and the heat conducting surface. The distance between the first heat conducting board **610** and the heat conducting surface **631** of the heat conducting structure **630** can be varied by means of relative sliding between the upper heat conducting arm **620** and the heat conducting structure **630**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm **620** of the first heat conducting board **610** and the heat conducting structure **630**. The heat conducting device **600** provided in the sixth embodiment differs from the heat conducting device **500** provided in the fifth embodiment in the following aspects.

[0056] In this embodiment, the first locating posts **516**, the second locating posts **532***c* and the first limit resilient elements **536***a* set around the first locating posts **516** and the second locating posts **532***c* in the heat conducting device **500** in the fifth embodiment are omitted. Further, a first resilient element **650** arranged between the second surface **614** of the first heat conducting board **610** and the upper surface **632***a* of the second heat conducting board **632** is employed in this embodiment to keep the relative position between the first heat conducting board **610** and heat conducting surface **631** of the heat conducting structure **630**. In this embodiment, the first resilient element **650** is located in the space surrounded by the upper heat conducting arm **620** and the lower heat conducting arm **634** together. In this embodiment, the first resilient element **650** is a spring sheet.

[0057] The heat conducting device **600** provided in the sixth embodiment of this invention may realize the same functions of the heat conducting device **500** provided in the fifth embodiment. Furthermore, the heat conducting device **600** employs a first resilient element **650** to keep the relative position between the first heat conducting board **610** and the heat conducting surface **631** of the heat conducting structure **630**, so that the structure of the heat conducting device **600** is greatly simplified, and the manufacture cost of the heat conducting device **600** can be further reduced.

[0058] Referring to FIG. **8**, FIG. **8** is a side view of a heat conducting device **700** provided according to a seventh embodiment of this invention. The structure of the heat conducting device **700** is similar to that of the heat conducting device **600** provided in the sixth embodiment, comprising a first heat conducting board **710** and a heat conducting structure **730**. The first heat conducting board **710** comprises at least one upper heat conducting arm **720** provided on one side surface of the first heat conducting board **710**. The heat conducting structure **730** is directly aligned to the upper heat conducting arm **720** of the first heat conducting board **710** and slidably abuts against the upper heat conducting arm **720** to perform heat transfer through the contact surface between the heat conducting structure **730** and the upper heat conducting arm **720**. The heat conducting structure **730** comprises a heat conducting surface **731** and is used to keep the relative position between the first heat conducting board **710** and the heat conducting surface. The distance between the first heat conducting board **710** and the heat conducting surface **731** of the heat conducting structure **730** can be varied by means of relative sliding between the upper heat conducting arm **720** and the heat conducting structure **730**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm **720** of the first heat conducting board **710** and the heat conducting structure **730**. The heat conducting device **700** provided in the seventh embodiment differs from the heat conducting device **600** provided in the sixth embodiment in the following aspects.

[0059] In this embodiment, the locking elements **638** and the second limit resilient elements **636***b* in the sixth embodiment are further omitted. Furthermore, two second resilient elements **770** provided on the supper surface **732***a* of the second heat conducting board **732** are employed in this embodiment, the second resilient elements **770** are adjacent to the lower heat conducting arms **734** and are abutted against the first heat conducting board **710**, so that the upper heat conducting arms **720** on the first heat conducting board **710** are closely abutted against the lower heat conducting arms **734** of the heat conducting structure **730** to ensure that a contact surface for heat transfer always exists between the first heat conducting board **710** and the heat conducting structure **730**. In order to make the contact of the contact surfaces more sufficient, a heat conductive filler, such as heat conductive silica gel, etc may be filled between the contact surfaces of the first heat conducting board **710** and the heat conducting structure **730**. In this embodiment, the second resilient elements **770** are spring sheets, but not limited to spring sheets.

[0060] The heat conducting device **700** provided in the seventh embodiment of this invention may realize the same functions of the heat conducting device **600** provided in the sixth embodiment. Furthermore, the heat conducting device **700** employs two second resilient element **770** to keep the close abutting between the upper heat conducting arms **720** and the lower heat conducting arms **734**, not only realizing effective heat transfer between the upper heat conducting arms **720** and the lower heat conducting arms **734**, but also further simplifying the structure of the heat conducting device **700**, further reducing the manufacture cost of the heat conducting device **700**.

[0061] It may be understood that the first resilient element **750** may have other alternative solutions, referring to FIG. **9**, the first resilient element **750** can be substituted by two resilient elements **780** disposed between the first heat conducting board **710** and the second heat conducting board **732**. In this embodiment, the resilient elements **780** are symmetrically disposed on the periphery of the region surrounded by the upper heat conducting arms **720** and the lower heat conducting arms **734**, but not limited to this region. The resilient elements **780** in this embodiment are metal coil springs, but not limited to metal coil springs. The resilient elements **780** may be substituted by elastic rubber or other elastic apparatus or elements.

[0062] It may be understood that, as shown in FIG. **10**, if the first heat conducting board **710** of the heat conducting device **700** and the second heat conducting board **732** of the heat conducting structure **730** are reliably connected to a heat source **20** of an electronic device and a heat dispersion device or case **40** corresponding to the heat source **20** through screw connection, riveting, adherence and other connection manners, the first resilient element **750** or the resilient elements **780** of the heat conducting device **700** can be both omitted, such that the structure of the heat conducting device **700** can be simplified further.

[0063] Referring to FIG. **11**, FIG. **11** is a side view of a heat conducting device **800** provided according to an eighth embodiment of this invention. The structure of the heat conducting device **800** is similar to that of the heat conducting device **700** provided in the seventh embodiment, comprising a first heat conducting board **810** and a heat conducting structure **830**. The first heat conducting board **810** comprises at least one upper heat conducting arm **820** provided on one side surface of the first heat conducting board **810**. The heat conducting structure **830** is directly aligned to the upper heat conducting arm **820** of the first heat conducting board **810** and slidably abuts against the upper heat conducting arm **820** to perform heat transfer through the contact surface between the heat conducting structure **830** and the upper heat conducting arm **820**. The heat conducting structure **830** comprises a heat conducting surface **831** and is used to keep the relative position between the first heat conducting board **810** and the heat conducting surface **831**. The distance between the first heat conducting board **810** and the heat conducting surface **831** of the heat conducting structure **830** can be varied by means of relative sliding between the upper heat conducting arm **820** and the heat conducting structure **830**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm **820** of the first heat conducting board **810** and the heat conducting structure **830**. The heat conducting device **800** provided in the eighth embodiment differs from the heat conducting device **700** provided in the seventh embodiment in the following aspects.

[0064] The first resilient element **750** and second resilient elements **770** of the heat conducting device **700** provided in the seventh embodiment are substituted with multiple integrated resilient elements **850** in the heat conducting device **800** provided in the eighth embodiment of this invention. The resilient elements **850** can not only keep the position relationship between the first heat conducting board **810** and the heat conducting structure **830**, but also keep the close abutting between the upper heat conducting arms **820** and the lower heat conducting arms **834** to realize effective heat transfer between the first heat conducting board **810** and the heat conducting structure **830**. Each of the resilient elements **850** comprises a locating segment **852**, a supporting segment **854** connected to the locating segment **852**, and a resilient segment **856** connected to an end of the supporting segment **854**. The locating segment **852** is fixed on the upper surface **832***a* of the second heat conducting board **832**. The supporting segment **854** is connected to an end of the locating segment **852** in a substantially vertical manner A positive or negative tolerance is allowed for the angle between the supporting segment **854** and the locating segment **852**. The resilient segment **856** is connected to the end of the supporting segment **854** apart from the supporting segment **854**, and is tilted towards the second heat conducting board **832**. Corresponding to the titled resilient segment **856**, a slant **826** is provided on a side **824** of the upper heat conducting arm **820**. The slant **826** of the upper heat conducting arm **820** is abutted against the resilient segment **856** of a corresponding resilient element **850**. The resilient segment **856** applies an elastic force on the slant **826** of the upper heat conducting arm **820**, which can be decomposed into a push force perpendicular to the side **824** of the upper heat conducting arm **820** to keep the close abutting between the upper heat conducting arm **820** and the lower heat conducting arm **834**, and a push force perpendicular to the end side **822** of the upper heat conducting arm **820** to keep the position relationship between the first heat conducting board **810** and the heat conducting structure **830**. Therefore, the heat conducting device **800** provided in this embodiment may provide forces required to keep the position relationship between the first heat conducting board **810** and the heat conducting structure **830** and to keep the close abutting between the upper heat conducting arm **820** and the lower heat conducting arm **834**, so that the structure of the heat conducting device **800** can be simplified. Furthermore, heat transfer also can be realized through the large area contact between the resilient element **850** and the second heat conducting board **832**, the upper heat conducting arm **820**, so that thermal conductivity between the first heat conducting board **810** and the heat conducting structure **830** can be improved. Furthermore, in order to prevent the escape of the upper heat conducting arm **820** from the resilient element **850** under the elastic force of the resilient element **850**, the slant **826** is connected to the end side **822** of the upper heat conducting arm **820** through a transition surface **828** parallel to the side surface **824**, and a block **823** protruding from the transition surface **828** is provided at a position on the transition surface **828** adjacent to the end side **822**. The block **823** and the end of the resilient segment **856** of the resilient element **850** are abutted with each other to prevent the separation phenomenon of the upper heat conducting arm **820** and the resilient element **850**.

[0065] Referring to FIG. **12**, FIG. **12** is a side view of a heat conducting device **900** provided according to a ninth embodiment of this invention. The heat conducting device **900** comprises a first heat conducting board **910** and a heat conducting structure **930**. The first heat conducting board **910** comprises at least one upper heat conducting arm **920** provided on a side surface of the first heat conducting board **910**. The heat conducting structure **930** is directly aligned to the upper heat conducting arm **920** of the first heat conducting board **910** and slidably abuts against the upper heat conducting arm **920** to perform heat transfer through the contact surface between the heat conducting structure **930** and the upper heat conducting arms **920**. The heat conducting structure **930** comprises a heat conducting surface **931** and is used to keep a relative position between the first heat conducting board **910** and the heat conducting surface. The distance between the first heat conducting board **910** and the heat conducting surface **931** of the heat conducting structure **930** can be varied by means of relative sliding between the upper heat conducting arms **920** and the heat conducting structure **930**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm **920** of the first heat conducting board **910** and the heat conducting structure **930**.

[0066] The first heat conducting board **910** comprises a first surface **912** and a second surface **914** corresponding to the first surface **912**.

[0067] This embodiment comprises multiple upper heat conducting arms **920**, containing a first upper heat conducting arm **921**, two second upper heat conducting arms **923** and a third upper heat conducting arm **925**. The first upper heat conducting arm **921**, the second upper heat conducting arms **923** and the third upper heat conducting arm **925** are sequentially provided on a second surface **914** of the first heat conducting board **910**. A first limit protrusion **921***a* protruding from a side surface **924** and flush with an end surface **922** of the first upper heat conducting arm **921** is provided on the side surface **924** of the first upper heat conducting arm **921** adjacent to an edge of the first heat conducting board **910**. The first limit protrusion **921***a* is used to match with a corresponding limit structure on the heat conducting structure **930** to restrict the position between the first heat conducting board **910** and the heat conducting structure **930**. A first groove **921***b* is provided on the end side **922** of the first upper heat conducting arm **921** to receive the limit device of the heat conducting structure **930**. The two second upper heat conducting arms **923** are provided on one side of the first upper heat conducting arm **921** with an interval. The third upper heat conducting arm **925** is provided on the first heat conducting board **910** on one side of the second upper heat conducting arms **923** apart from the first upper heat conducting arm **921**. A second groove **925***a* adjacent to the second surface **914** of the first heat conducting board **910** is provided on a side surface **924** of the third upper heat conducting arm **925** facing the first upper heat conducting arm **921**, a second limit protrusion **925***b* is formed on one end of the second groove **925***a* apart from the first heat conducting board **910**. The second limit protrusion **925***b* is used to match a corresponding limit structure on the heat conducting structure **930** to restrict the position between the first heat conducting board **910** and the heat conducting structure **930**.

[0068] Referring to FIG. **13**, FIG. **13** is a perspective schematic view of the heat conducting structure **930** provided in the ninth embodiment of this invention.

[0069] The heat conducting structure **930** comprises a second heat conducting board **932**, multiple lower heat conducting arms **934** formed on the second heat conducting board **932**, multiple resilient elements **936** and multiple locking elements **938**.

[0070] The second heat conducting board **932** comprises an upper surface **932***a* and a lower surface **932***b* corresponding to the upper surface **932***a*. In this embodiment the heat conducting surface **931** and the lower surface **932***b* of the second heat conducting board **932** are the same surface. The second heat conducting board **932** is square in shape, two lips **932***d* are formed on diagonal positions of the second heat conducting board **932** respectively, with two through holes **932***e* provided on the two lips **932***d* for securing the second heat conducting board **932** to an attachment, such as a heat source or a heat dispersing shield in an electronic device by means of fasteners passing through the through holes **932***e*.

[0071] The structure and arrangement of the lower heat conducting arms **934** are as same as that of the upper heat conducting arms **920**. The multiple lower heat conducting arms **934** comprises a first lower heat conducting arm **934***a,* two second lower heat conducting arms **934***b,* and a third lower heat conducting arm **934***c*. The first lower heat conducting arm **934***a,* the second lower heat conducting arms **934***b,* and the third lower heat conducting arm **934***c* are sequentially provided on the upper surface **932***a* of the second heat conducting board **932**. A third limit protrusion **934***d* corresponding to and capable of clipping with the second limit protrusion **925***b* on the third upper heat conducting arm **925** protrudes from a side surface of the first lower heat conducting arm **934***a* adjacent to an edge of the second heat conducting board **932**, and a third groove **934***e* is provided on the first lower heat conducting arm **934***a* at a position adjacent to the third limit protrusion **934***d*. The two second lower heat conducting arms **934***b* are provided on the second heat conducting board **932** on one side of the first lower heat conducting arm **934***a* at a certain interval. The third lower heat conducting arm **934***c* is provided on the second heat conducting board **932** on one side of the second lower heat conducting arms **934***b* apart from the first lower heat conducting arm **934***a*. A fourth groove **934***f* is formed on the third lower heat conducting arm **934***c,* corresponding to the first limit protrusion **921***a* on the first upper heat conducting arm **921**, a fourth limit protrusion **934***g* capable of clipping with the first limit protrusion **921***a* is formed on one end of the fourth groove **934***f* apart from the upper surface **932***a* of the second heat conducting board **932**.

[0072] The multiple resilient elements **936** are disposed in the first groove **921***b* and the third groove **934***e* respectively. Each of the resilient elements **936** comprises a fixing portion **936***a,* two first resilient arms **936***b* symmetrically formed on opposite sides of the fixing portion **936***a,* and a second resilient arm **936***c* provided on the fixing portion **936***a* and located at a side edge between the two first resilient arms **936***b*. The two first resilient arms **936***b* are folded an angle towards a direction vertical to the fixing portion **936***a,* preferably, the folding angle causes the folded first resilient arms **936***b* abutted against the first heat conducting board **910** and the second heat conducting board **932** when the second limit protrusion **925***b* is clipped with the third limit protrusion **934***d* and the first limit protrusion **921***a* is clipped with the fourth limit protrusion **934***g*. The second resilient arm **936***c* is folded an angle towards a direction opposite to the folding direction of the first resilient arms **936***b,* preferably, an angle causing that the second resilient arm **936***c* can abut against an adjacent upper heat conducting arm **920** or a lower heat conducting arm **934** when the first heat conducting board **910** is matched to the heat conducting structure **930**.

[0073] When assembled, first of all, the fixing portion **936***a* of a resilient element **936** is secured on the underside of the first groove **921***b* or the third groove **934***e* through locking elements **938**. Then, the first resilient arms **936***b* and the second resilient arm **936***c* of the resilient elements **936** is compressed, the first limit protrusion **921***a* and the second groove **925***a* of the first heat conducting board **910** are aligned with the fourth groove **934***f* and the third limit protrusion **934***d* of the heat conducting structure **930**, and the first limit protrusion **921***a* slides into the fourth groove **934***f* from one side of the heat conducting structure **930**, the third limit protrusion **934***d* slides into the second groove **925***a,* so that the first limit protrusion **921***a* and the second limit protrusion **925***b* of the first heat conducting board **910** clip with the fourth limit protrusion **934***g* and the third limit protrusion **934***d* of the heat conducting structure **930** respectively. Finally, the first resilient element **936***b* and the second resilient element **936***c* are released such that the first resilient element **936***b* abut against first heat conducting board **910** or second heat conducting board **932** corresponding to first resilient element **936***b* to keep the relative position between the first heat conducting board **910** and the heat conducting structure **930**, at the same time, the second resilient element **936***c* abuts against the adjacent second upper heat conducting arm **920** or second lower heat conducting arm **934** to provide an elastic force causing the multiple upper heat conducting arms **920** and lower heat conducting arms **932** closely abutted to ensure that a contact surface for heat transfer always exists between the upper heat conducting arms **920** and the lower heat conducting arms **934**. The assembly manner of the heat conducting device **900** is merely one manner for the introduction of this embodiment, and other assembly manners can be employed, such as the first heat conducting board **910** is directly disposed above the heat conducting structure **930** to make the spaces between the upper heat conducting arms **920** corresponding to the spaces between the lower heat conducting arms **934**, then a press is applied on the first heat conducting board **910** by which the first resilient arms **936***b* and the second resilient arm **936***c* of the resilient element **936** produce elastic deformations, as the upper heat conducting arms **920** gradually insert into the spaces between the lower heat conducting arms **934**, the second resilient element **936***c* abuts against the adjacent second upper heat conducting arm **920** or second lower heat conducting arm **934** and produces an elastic deformation, a trend of relative movement exists between the first heat conducting board **910** and the adjustable heat conducting structure **930** under the effect of the elastic force of the second resilient element **936***c,* with such a trend of movement, the first limit protrusion **921***a* and the second limit protrusion **925***b* of the first heat conducting board **910** clip with the fourth limit protrusion **934***g* and the third limit protrusion **934***d* of the heat conducting structure **930** respectively to complete the assembly of the heat conducting device **900**.

[0074] The heat conducting device **900** provided in this embodiment may keep the relative position between the first heat conducting board **910** and the heat conducting structure **930**, and ensure that a contact surface for heat transfer always exists between the first heat conducting board **910** and the heat conducting structure **930** through integrated resilient elements **936**, so as to realize an adjustable distance between the first heat conducting board **910** and the heat conducting structure **930** and make sure good heat transfer property at the same time. Furthermore, employing integrated resilient elements **936** may simplify the structure of the heat conducting device **900** and reduce cost.

[0075] Referring to FIG. **14**, FIG. **14** is a side view of a heat conducting device **1000** provided according to a tenth embodiment of this invention. The heat conducting device **1000** comprises a first heat conducting board **1010** and a heat conducting structure **1030**. The first heat conducting board **1010** comprises at least one upper heat conducting arm **1020** provided on a side surface of the first heat conducting board **1010**. The heat conducting structure **1030** directly faces the upper heat conducting arm **1020** of the first heat conducting board **1010** and slidably abuts against the upper heat conducting arm **1020** to perform heat transfer through the contact surface between the heat conducting structure **1030** and the upper heat conducting arms **1020**. The heat conducting structure **1030** comprises a heat conducting surface **1031** and is used to keep a relative position between the first heat conducting board **1010** and the heat conducting surface. The distance between the first heat conducting board **1010** and the heat conducting surface **1031** of the heat conducting structure **1030** can be varied by means of relative sliding between the upper heat conducting arms **1020** and the heat conducting structure **1030**, at the same time, it is ensured that a contact surface for heat transfer always exists between the upper heat conducting arm **1020** of the first heat conducting board **1010** and the heat conducting structure **1030**.

[0076] The first heat conducting board **1010** comprises a first surface **1012** and a second surface **1014** corresponding to the first surface **1012**.

[0077] This embodiment comprises multiple upper heat conducting arms **1020**, containing a first upper heat conducting arm **1021**, two second upper heat conducting arms **1023** and a third upper heat conducting arm **1025**. The first upper heat conducting arm **1021**, the second upper heat conducting arms **1023** and the third upper heat conducting arm **1025** are sequentially provided on a second surface **1014** of the first heat conducting board **1010**. A first limit protrusion **1021***a* protruding from a side surface **1024** and flush with an end surface **1022** of the first upper heat conducting arm **1021** is provided on the side surface **1024** of the first upper heat conducting arm **1021** adjacent to an edge of the first heat conducting board **1010**. The first limit protrusion **1021***a* is used to match with a corresponding limit structure on the heat conducting structure **1030** to restrict the position between the first heat conducting board **1010** and the heat conducting structure **1030**. A first trench **1021***b* is provided on the first limit protrusion **1021***a* along a direction perpendicular to the first heat conducting board **1010**, the depth of which is less than the height of the first limit protrusion **1021***a* with respect to the side surface **1024** where the first limit protrusion **1021***a* locates. The first trench **1021***b* is used for guiding and position limiting during the assembly of the first heat conducting board **1010** and the heat conducting structure **1030**. A first slant **1024***a* is formed on the first upper heat conducting arm **1021** on a side surface **1024** corresponding to the side surface where the first trench **1021***b* is formed. A first convex bar **1021***c* running through the first slant **1024***a* along a direction parallel to the extending direction of the longer side of the end side **1022** of the first upper heat conducting arm **1021** is formed at the middle portion of the first slant **1024***a* of the first upper heat conducting arm **1021**. The two second upper heat conducting arms **1023** are provided on the first heat conducting board **1010** on one side of the first upper heat conducting arm **1021** with an interval. A second slant **1023***a* parallel to the first slant **1024***a* is formed on each of the second upper heat conducting arms **1023**. The third upper heat conducting arm **1025** is provided on the first heat conducting board **1010** on one side of the second upper heat conducting arms **1023** apart from the first upper heat conducting arm **1021**. A first groove **1025***a* adjacent to the second surface **1014** of the first heat conducting board **1010** is provided on a side surface of the third upper conducting arm **1025** which facing the slant **1024***a* of the first upper heat conducting arm **1021**. A second limit protrusion **1025***b* is formed on one end of the first groove **1025***a* apart from the first heat conducting board **1010**. The second limit protrusion **1025***b* is used to match a corresponding limit structure on the heat conducting structure **1030** to keep the position between the first heat conducting board **1010** and the heat conducting structure **1030**.

[0078] Referring to FIG. **15**, FIG. **15** is a perspective schematic view of the heat conducting device **1030** provided in the tenth embodiment of this invention.

[0079] The heat conducting device **1030** comprises a second heat conducting board **1032**, multiple lower heat conducting arms **1034** formed on the second heat conducting board **1032** and multiple resilient elements **1036**.

[0080] The second heat conducting board **1032** comprises an upper surface **1032***a* and a lower surface **1032***b* corresponding to the upper surface **1032***a*. In this embodiment the heat conducting surface **1031** and the lower surface **1032***b* of the second heat conducting board **1032** are the same surface. The second heat conducting board **1032** is square in shape, two lips **1032***d* are formed on diagonal positions of the second heat conducting board **1032** respectively, with two through holes **1032***e* provided on the two lips **1032***d* for securing the second heat conducting board **1032** to an attachment, such as a heat source or a heat dispersing shield in an electronic device by means of fasteners passing through the through holes **1032***e*.

[0081] The structure and arrangement of the lower heat conducting arms **1034** are as same as that of the upper heat conducting arms **1020**. The multiple lower heat conducting arms **1034** comprise a first lower heat conducting arm **1034***a*, two second lower heat conducting arms **1034***b*, and a third lower heat conducting arm **1034***c*. The first lower heat conducting arm **1034***a*, the second lower heat conducting arms **1034***b*, and the third lower heat conducting arm **1034***c* are sequentially provided on the upper surface **1032***a* of the second heat conducting board **1032**. A third limit protrusion **1034***d* corresponding to and capable of clipping with the second limit protrusion **1025***b* on the third upper heat conducting arm **1025** protrudes from a side surface of the first lower heat conducting arm **1034***a* adjacent to an edge of the second heat conducting board **1032**. A second trench **1034***e* is provided on the third limit protrusion **1034***d* on a side corresponding to an edge of the second heat conducting board **1032**. The width of the second groove **1034***e* is larger than the length of the third upper heat conducting arm **1025** on the first heat conducting board **1010** to accommodate the third upper heat conducting arm **1025**. A third slant **1034***h* is formed on another side of the first lower heat conducting arm **1034***a* opposite to side where the second groove **1034***e* locates, a second convex bar **1034***i* is formed on the third slant **1034***h* running through the third slant **1034***h* along the direction of a longer cross line between the first lower heat conducting arm **1034***a* and the second heat conducting board **1032**. The two second lower heat conducting arms **1034***b* are provided on the second heat conducting board **1032** on one side of the first lower heat conducting arm **1034***a* at a certain interval, wherein a fourth slant **1034***g* parallel to the third slant **1034***h* is formed on each of the second lower heat conducting arms **1034***b*. The third lower heat conducting arm **1034***c* is provided on the second heat conducting board **1032** on one side of the second lower heat conducting arms **1034***b* apart from the first lower heat conducting arm **1034***a*. A second groove **1034***f* is formed on the third lower heat conducting arm **1034***c* corresponding to the first limit protrusion **1021***a* on the first upper heat conducting arm **1021**, a fourth limit protrusion **1034***k* capable of clipping with the first limit protrusion **1021***a* is formed on one end of the second groove **1034***f* apart from the upper surface **1032***a* of the second heat conducting board **1032**.

[0082] The resilient elements **1036** of this embodiment are clamp springs, which each of the resilient elements **1036** comprises a dome resilient portion **1036***a* and clip portions **1036***b* extending from opposite sides of the resilient portion **1036***a* and bent in opposite directions, there is a distance between the ends of the two clip portions **1036***b*. The multiple resilient elements **1036** clip on the first convex bar **1021***c* of the first heat conducting board **1010** and second convex bar **1034***i* of the adjustable heat conducting structure **1030** through their clip portions **1036***b* respectively.

[0083] When assembled, the first heat conducting board **1010** is disposed above the heat conducting structure **1030**, making the spaces between the upper heat conducting arms **1020** correspond to the spaces between the lower heat conducting arms **1034**, and the third upper heat conducting arm **1025** and the third lower heat conducting arm **1034***c* relatively slide along the second groove **1034***e* of the first lower heat conducting arm **1034***a* and the first trench **1021***b* of the first upper heat conducting arm **1021**, so that the resilient elements **1036** clipped on the first convex bar **1021***c* and second convex bar **1034***i* abut against the second slants **1023***a* of their adjacent upper heat conducting arms **1020** and the fourth slants **1034***g* of the lower heat conducting arms **1034** via the resilient portion **1036***a*. Then, a press is applied on the first heat conducting board **1010**, the resilient portions **1036***a* of the resilient elements **1036** produce a elastic deformation under the press, and a elastic force due to the elastic deformation of the resilient portions **1036***a* may cause a trend of mutual separation between the first heat conducting board **1010** and the heat conducting structure **1030** in the direction perpendicular to the first heat conducting board **1010**, and a trend of mutual close in the direction parallel to the first heat conducting board **1010**. As the upper heat conducting arms **1020** are inserted into the spaces between the lower heat conducting arms **1034** step by step, the first limit protrusion **1021***a* and the second limit protrusion **1025***b* of the first heat conducting board **1010** clip with the fourth limit protrusion **1034***k* and the third limit protrusion **1034***d* of the heat conducting structure **1030** under the elastic force of the resilient elements **1036** to complete the assembly of the device **1000**.

[0084] The heat conducting device **1000** provided in this embodiment may keep the relative position between the first heat conducting board **1010** and the heat conducting structure **1030**, and ensure that a contact surface for heat transfer always exists between the first heat conducting board **1010** and the heat conducting structure **1030** through resilient elements **1036** having a simple structure, so as to realize an adjustable distance between the first heat conducting board **1010** and the heat conducting structure **1030** and make sure good heat transfer property at the same time, further simplifying the structure of the heat conducting device **1000** and lowering cost.

[0085] It may be understood that the structure of the resilient elements **1036** is not limited to that given in this embodiment, and may be any structure implementing the functions of the resilient elements **1036** based on the concept of this invention, in another embodiment shown in FIG. **16** for example, the resilient elements **1036** may be substituted with "Z" shaped or "V" shaped resilient elements **1038**, which may abut against the second slants **1023***a* of their adjacent upper heat conducting arms **1020** and the fourth slants **1034***g* of the lower heat conducting arms **1034** with their mutually apart resilient arms **1038***a* to provide a elastic force capable of keeping the position relationship between the first heat conducting board **1010** and the adjustable heat conducting structure **1030**, and ensuring that a contact surface for heat transfer always exists between the upper heat conducting arms **1020** and the lower heat conducting arms **1034**.

[0086] All of the heat conducting devices provided in the above embodiments of this invention may be used in various electronic products for heat dispersion. In order to illustrate the arrangement of heat conducting devices of this invention in electronic products, the heat conducting device **500** provided in the fifth embodiment of this invention is merely used for illustrate its application in an electronic device.

[0087] Referring to FIG. **17**, FIG. **17** is an electronic device **1100** in which a heat conducting device **500** is applied provided in the eleventh embodiment of this invention.

[0088] The electronic device comprises a circuit board **1110**, multiple chips **1120** mounted on the circuit board **1110**, a heat dispersing shield **1130** provided on the circuit board **1110** for accommodating the multiple chips **1120**, a heat dispersion device **1140** on the heat dispersing shield **1130**, one or more heat conducting devices **500** disposed between the chips **1120** and the heat dispersing shield **1130**. The second heat conducting boards **532** of the heat conducting structures **530** of the heat conducting devices **500** are fixed on the inner sides of the heat dispersing shield **1130** corresponding to the chips **1120**, the heat conducting surfaces **531** of the heat conducting structures **530** are closely attached to the heat dispersing shield **1130**. The first heat conducting boards **510** of the heat conducting devices **500** are arranged and closely attached on the surfaces of the chips **1120**. When the distances between the multiple chips **1120** and the heat dispersing shield **1130** are different, good heat transfer may be realized through independently adjusting the distances between the first heat conducting boards **510** and the heat conducting surfaces **531** with the heat conducting structures **530** of the heat conducting devices **500** to cause the heat conducting devices **500** to keep good contact between the chips **1120** and the heat dispersing shield **1130** all the time. For more sufficient contact between the heat conducting structures **530** and the heat dispersing shield **1130**, and thus better heat transfer effect, heat dispersion convexes **1150** can be provided between the heat conducting structures **530** and the heat dispersing shield **1130**.

[0089] Furthermore, it may be understood that in order to provide good heat conduction property for a heat conducting device provided in the above embodiment of this invention and an electronic device using the heat conducting device, a heat conducting filler or a conductive interface material can be filled between the contact surfaces for heat transfer of the heat conducting device and the electronic device using the heat conducting device.

[0090] The heat conducting device employed in the electrical device provided in the embodiment of this invention may adjust its own thickness according to use environments and manufacture errors to adapt variations in distance between a heat source and the heat dispersion structure, so as to ensure effective heat dispersion of the electronic device. Further, the heat conducting device provided in the embodiment of this invention employs high thermal conductivity materials for heat conduction, so that heat conduction efficiency can be greatly improved, at the same time, the structure of the heat conducting device provided in the embodiment of this invention is simple and easy to implement, thus, cost can be reduced and energy can be saved through large scale production.

[0091] The description above is merely preferable embodiments of this invention, but is not intended to limit this invention. Any modification, equivalent or improvement in the spirit and principle of this invention should be covered in the scope of this invention.

What is claimed is:

1. A heat conducting device, wherein,

the heat conducting device comprises a first heat conducting board and a heat conducting structure, the first heat conducting board comprising an upper heat conducting arm provided on one surface of the first heat conducting board, the heat conducting structure slidably abutting against the upper heat conducting arm of the first heat conducting board to form a contact surface through which heat transfer is realized, the heat conducting structure comprising a heat conducting surface, wherein the heat conducting structure is used to keep the relative position between the first heat conducting board and the heat conducting surface, allow the varying of the distance between the first heat conducting board and the heat conducting surface of the heat conducting structure by means of relative sliding between the upper heat conducting arm and the heat conducting structure, and ensure that a contact surface for heat transfer always exists between the upper heat conducting arm of the first heat conducting board and the heat conducting structure.

2. The heat conducting device according to claim **1**, wherein,

the heat conducting structure comprises at least one lower heat conducting arm relatively slidable with respect to the upper heat conducting arm, wherein the heat conducting structure and the upper heat conducting arm of the first heat conducting board slidablly abut with each other through the lower heat conducting arm.

3. The heat conducting device according to claim **2**, wherein,

the upper heat conducting arm is formed by a resilient material.

4. The heat conducting device according to claim **2**, wherein,

the lower heat conducting arm is formed by a resilient material.

5. The heat conducting device according to claim **2**, wherein,

the heat conducting structure further comprises a second heat conducting board, the second heat conducting board comprises an upper surface and a lower surface opposite to the upper surface, wherein the heat conducting surface is positioned on the lower surface and the lower heat conducting arm is provided on the upper surface of the second heat conducting board.

6. The heat conducting device according to claim **5**, wherein,

the at least one lower heat conducting arm comprises two heat conducting reeds having the same structure and symmetrically provided on the upper surface of the second heat conducting board, each of the heat conducting reeds comprising a support portion and a resilient portion formed on an end of the support portion, wherein the resilient portions of the heat conducting reeds abut against the sides of the upper heat conducting arm.

7. The heat conducting device according to claim **2**, wherein,

the at least one upper heat conducting arm comprises two structural symmetric resilient sheets, wherein each of the resilient sheets comprises a connecting segment and a abutting segment connected to the connecting segment, wherein the upper heat conducting arm abuts against the lower heat conducting arm through the abutting segments.

8. The heat conducting device according to claim **7**, wherein,

the two resilient sheets of the at least one upper heat conducting arm are symmetrically provided on the first heat conducting board, such that the abutting segments of the two resilient sheets abut are located on divergent sides of the connecting segments of the resilient sheets.

9. The heat conducting device according to claim **8**, wherein,

the two resilient abutting segments of the at least one upper heat conducting arm form a taper having a cross section gradually shrinking along the direction of from a position close to the first heat conducting board toward a position apart from the first heat conducting board.

10. The heat conducting device according to claim **9**, wherein,

the heat conducting structure further comprises a second heat conducting board, wherein the lower heat conducting arm is provided on the second heat conducting board and forms an angle with the second heat conducting board; the lower heat conducting arm comprises two heat conducting reeds having the same structure and symmetrically provided on the second heat conducting board; the lower heat conducting arm and the abutting segments of the upper heat conducting arm abut with each other through the heat conducting reeds.

11. The heat conducting device according to claim **2**, wherein,

the lower heat conducting arm comprises a locating segment, two resilient segments connected to the opposite sides of the locating segment respectively, and two resilient boom segments connected to corresponding ends of the resilient segments respectively;

the bottom of the locating segment forms the heat conducting surface, and the upper heat conducting arm abuts against the resilient boom segments of the lower heat conducting arm.

12. The heat conducting device according to claim **11**, wherein,

the two resilient segments of the lower heat conducting arm are connected to the opposite sides of the locating segment, the middle portions of the two resilient segments are folded along opposite directions to form energy storage portions, the two resilient boom segments of the lower heat conducting arm are connected to one end of the resilient segments apart from the locating segment respectively by means of paralleling to the locating segment, and are opposite to each other.

13. The heat conducting device according to claim **12**, wherein,

the upper heat conducting arm comprises an end surface and a side surface perpendicularly surrounding the end surface; a taper surface is formed between the end surface and the side surface of the upper heat conducting arm; the upper heat conducting arm abuts against the two resilient booms of the lower heat conducting arm through the taper surface of the upper heat conducting arm.

14. The heat conducting device according to claim **2**, wherein,

two upper heat conducting arms spaced apart are provided on the first heat conducting board of the heat conducting device; the lower heat conducting arm corresponds to the spaced region between the two upper heat conducting arms of the first heat conducting board; the lower heat conducting arm comprises a locating segment, two resilient segments connected to the opposite sides of the locating segment respectively, and two resilient boom segments connected to corresponding ends of the resilient segments respectively; the bottom of the locating segment forms the heat conducting surface; the two upper heat conducting arms abut against the resilient boom segments of the lower heat conducting arm respectively.

15. The heat conducting device according to claim **14**, wherein,

the two resilient segments of the lower heat conducting arm are connected to the opposite ends of the locating segment; the two resilient boom segments are connected to the sides of the resilient segments apart from the locating segment along divergent directions respectively and are folded towards the locating segment.

16. The heat conducting device according to claim **2**, wherein,

the heat conducting structure further comprises a second heat conducting board and a resilient element;

the lower heat conducting arm is provided on the second heat conducting board; the heat conducting surface is formed on the second heat conducting board; the resilient element is provided on the heat conducting structure or the first heat conducting board, and abuts against the lower heat conducting arm or the upper conducting arm to keep close abutting between the lower heat conducting arm and the upper conducting arm.

17. The heat conducting device according to claim **16**, wherein,

the resilient elements comprise a first resilient element and a second resilient element;

the first resilient element is provided between the first heat conducting board and the second heat conducting board to keep the distance between the heat conducting surfaces of the first heat conducting board and the second heat conducting board; the second resilient element is provided on the second heat conducting board at a position adjacent to the lower heat conducting arm and abut against the upper heat conducting arm, so that the upper heat conducting arm of the first heat conducting board closely abuts against the lower heat conducting arm of the heat conducting structure.

18. The heat conducting device according to claim **17**, wherein,

the first heat conducting board comprises a first surface and a second surface opposite to the first surface;

the upper heat conducting arm is provided on the second surface of the first heat conducting board; first locating posts are further formed on the second surface of the first heat conducting board; the resilient elements for keeping the distance between the first heat conducting board and the second heat conducting board are set around the first locating posts.

19. The heat conducting device according to claim **18**, wherein,

the second heat conducting board comprises an upper surface and a lower surface opposite to the upper surface; the heat conducting surface and the lower surface of the second heat conducting board are the same surface; the lower heat conducting arm is provided on the upper surface of the second heat conducting board; second locating posts are formed on the upper surface of the second heat conducting board; the second locating posts are symmetrically arranged in space with respect to the first locating posts; the resilient elements for keeping the distance between the first conducting board and the second conducting board are set around the first locating posts and the second locating posts respectively.

20. The heat conducting device according to claim **19**, wherein,

multiple upper heat conducting arms are provided on the first heat conducting board of the heat conducting device; the multiple upper heat conducting arms are plate structures spaced apart and provided on the second surface of the first heat conducting board in parallel; multiple lower heat conducting arms are provided on the second heat conducting board; the lower heat conducting arms are provided on the upper surface of the second heat conducting board in the same arrangement manner as the upper heat conducting arms; the upper heat conducting arms and the lower heat conducting arms are arranged alternately and abut with each other.

21. The heat conducting device according to claim **20**, wherein,

the two outmost upper heat conducting arms among the multiple upper heat conducting arms are provided with multiple first screw holes and first sliding holes corresponding to each other, wherein the multiple first screw holes are provided on a same upper heat conducting arm, and the first sliding holes are provided on the another upper heat conducting arm; the two outmost lower heat conducting arms among the multiple lower heat conducting arms are provided with second sliding holes and second screw holes corresponding to the first screw holes and first sliding holes on the upper heat conducting arms respectively; the heat conducting structure further comprises multiple locking elements; the resilient elements for keeping close abutting between the upper heat conducting arms and the lower heat conducting arms are set around the locking elements; the locking elements and the resilient elements setting around the locking elements are locked into the first screw holes and the second screw holes respectively and extended into the second sliding holes and the first sliding holes correspondingly.

22. The heat conducting device according to claim **21**, wherein,

wherein the first sliding holes and the second sliding holes have a hole diameter larger than that of the first screw holes and the second screw holes, and the first sliding holes and the second sliding holes are elongate holes.

23. The heat conducting device according to claim **16**, wherein,

the resilient element comprises a locating segment, a support segment connected to the locating segment and a resilient segment connected to an end of the support segment;

the resilient element is fixed on the second heat conducting board through the locating segment; the resilient segment of the resilient element abuts against the upper heat conducting arm.

24. The heat conducting device according to claim **23**, wherein,

the support segment of the resilient element is perpendicularly connected to an end of the locating segment; the resilient segment is connected to an end of the support segment apart from the locating segment and inclines towards the second heat conducting board.

25. The heat conducting device according to claim **24**, wherein,

a slant is formed on the upper heat conducting arm, which abuts against the resilient segment of a resilient element corresponding to the upper heat conducting arm.

26. The heat conducting device according to claim **25**, wherein,

a transition surface is provided between the slant and the end surface of the upper heat conducting arm; a block protruding from the transition surface is provided at a position on the transition surface adjacent to the end surface of the upper heat conducting arm; the block and the end of the resilient segment of the resilient element abut with each other.

27. The heat conducting device according to claim **16**, wherein,

limit structures capable of clipping with each other are provided on the upper heat conducting arm and the lower heat conducting arm respectively to restrict the relative position between the first heat conducting board and the heat conducting surface.

28. The heat conducting device according to claim **27**, wherein,

a groove is provided on corresponding ends of the upper heat conducting arm and the lower heat conducting arm; the resilient elements are provided in the grooves of the upper heat conducting arm and the lower heat conducting arm respectively.

29. The heat conducting device according to claim **28**, wherein,

the resilient element comprises a fixing portion, two first resilient arms symmetrically formed on opposite sides of the fixing portion, and a second resilient arm on the fixing portion positioned on an side edge between the two first resilient arms;

the resilient element is fixedly mounted in the groove of the upper heat conducting arm and the lower heat conducting arm through the fixing portion; the first resilient arms of the resilient element abut against the first heat conducting board or second heat conducting board corresponding to the first resilient arms; the second resilient arm of the first resilient element abuts against an adjacent upper heat conducting arm or lower heat conducting arm.

30. The heat conducting device according to claim **29**, wherein,

parallel slants are provided on the upper heat conducting arm and the lower heat conducting arm respectively; the resilient element is elastically clipped between the slants of the corresponding upper heat conducting arm and the lower heat conducting arm.

31. The heat conducting device according to claim **30**, wherein,

convex bars are provided on the slants of the upper heat conducting arm and the lower heat conducting arm respectively; the resilient elements are clipped on the convex bars.

32. The heat conducting device according to claim **27**, wherein,

the limit structures are multiple limit protrusions mutually clipped with each other, which are provided on the upper heat conducting arm and the lower heat conducting arm respectively.

33. An electronic device applying the heat conducting device according to claim **1**, wherein,

the electronic device comprises a circuit board, multiple chips provided on the circuit board, a heat dispersing shield provided on the circuit board for accommodating the chips, a heat dispersion device provided on the heat dispersing shield, and multiple heat conducting devices;

the multiple heat conducting devices are provided between the chips and the heat dispersing shield; first heat conducting boards of the heat conducting devices are closely adhered to the chips; the heat conducting structures of the heat conducting devices tightly abut on the heat dispersing shield through their heat conducting surfaces.

34. The electronic device according to claim **33**, wherein,

a heat dispersion convex is provided between the heat conducting surfaces of the heat conducting structure and the heat dispersion shield.

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